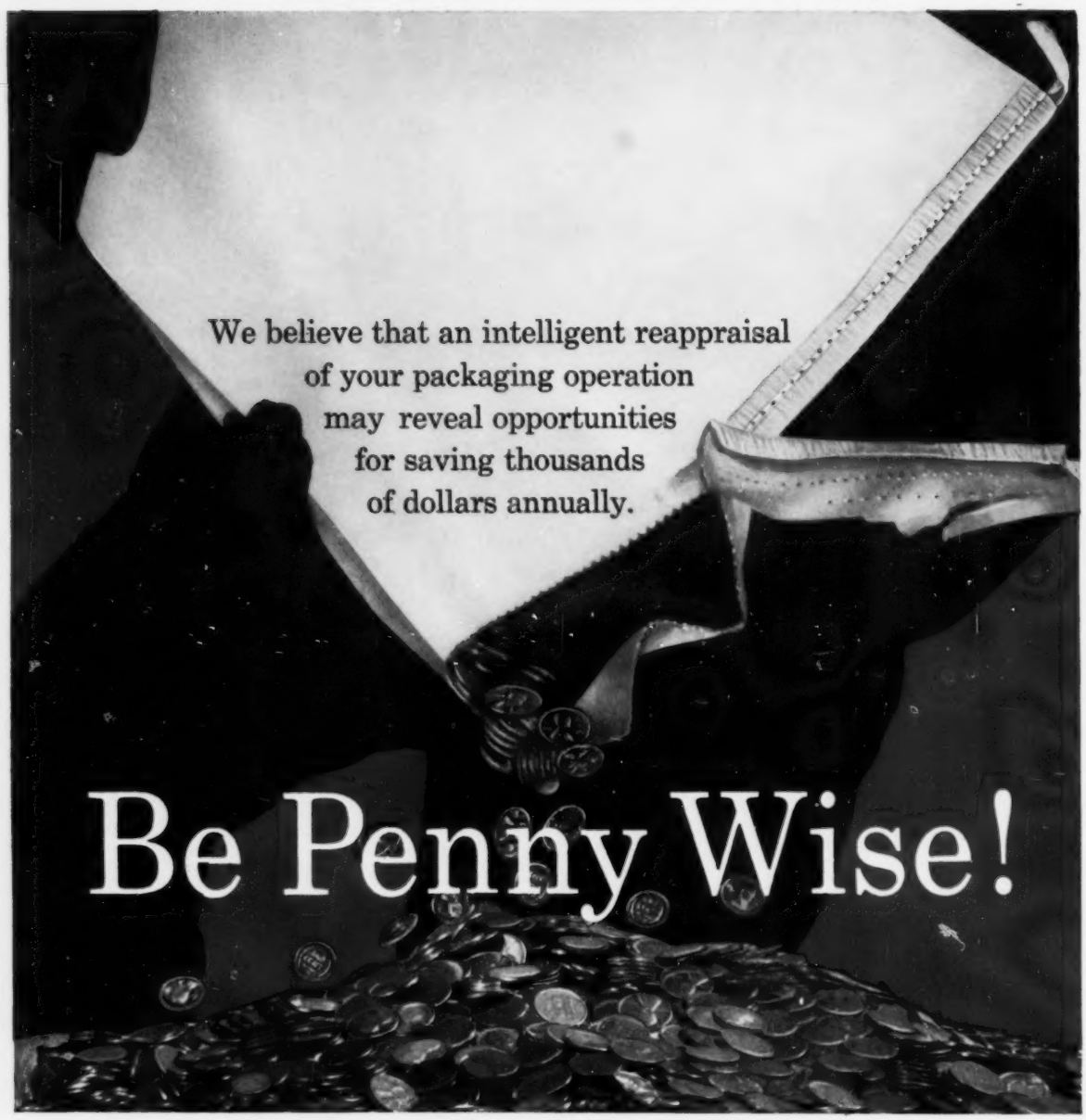
SEPTEMBER, 1958

Commercial Fertilizer
and PLANT FOOD INDUSTRY

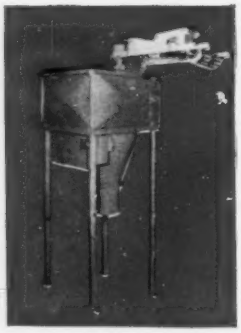
Allied Chemical Research Created and Developed Nitrogen Solutions

See Page 20

Advertisement of NITROGEN DIVISION, ALLIED CHEMICAL



IN BUYING MULTIWALL BAGS NO SAVING IS TOO SMALL TO IGNORE!



THE KRAFTPACKER Open Mouth Bag Filling Machine, for free-flowing material, automatically saves pennies, too, through higher production and greater accuracy. Requires a lower investment and maintenance cost than any other automatic machine of its type in use today!

KRAFT BAG CORPORATION

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Daily News Bldg., Chicago 6, Ill.

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Exclusive Sales Agents for Kraftpacker

Show me how to save on my multiwall bag packaging.

Gilman PAPER CO.
• St. Marys Kraft Corp.
• Command Tape Div.
• The Calhoun Corp.
• Kraft Bag Corp.

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ADDRESS.....

CITY..... ZONE.... STATE.....

PRODUCT MFD.....

NAME.....

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Make SMIROW TANKAGE the sales builder in your fertilizer

SMIROW is the quality, natural organic supplement to chemical plant foods.

- **Valuable to your customers**
  because it provides for *controlled release* of plant nutrients for health, steady growth and good color. SMIROW Tankage is 100% natural organic.
- **Valuable to your dealers**
  because it is plainly visible in fertilizer – they can point to it in selling *your* brand.
- **Valuable to your employees**
  because it's less dusty. No hazard in handling.
- **Valuable to you**
  for all these reasons. SMIROW Tankage provides a built-in sales stimulant in a time of keen competition.

SMITH-ROWLAND CO.
P. O. Box 1219, Norfolk 1, Va.
A DIVISION OF SMITH DOUGLASS COMPANY INCORPORATED

Let us figure the cost of SMIROW tankage delivered to your plant.

Published Monthly by
WALTER W. BROWN PUBLISHING CO., INC.
75 Third St., N. W., Atlanta 8, Ga.
Phone TRinity 4-4160

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Commenting Freely

by BRUCE MORAN

The other day a proponent of continuing adult education told a story which seems pertinent to our industry. A boy had been taught about contour plowing, but when the teacher visited the farm he found boy and mule going up one side of the hill and down the other. Asking, he was told: "Yes, I remember what you taught me, but it's different here. Here, we do what Pop says do."

Perhaps we are too proud of what we teach the rising generation, and the leavening process we expect from it. Maybe we should do a little checking up to see if there may not be some way to reach the farmers who are still doing things the way grandpa did them.

And there is the further thought that many of our farmers, now in command of their own acres, have fallen behind in the techniques developed since they went to agriculture schools. Should we not do something to make sure these are exposed to continuing education, by way of farm papers, neighborhood meetings and the like?

The word is not "should" we do it. We must do it in self defense. We must become as ardent advocates of continuing adult education as that speaker I heard the other day.

Vol. 97 No. 3 *Established 1910* September, 1958

Commercial Fertilizer
and PLANT FOOD INDUSTRY

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3 months in orbit
and already charting new courses of
service for the fertilizer industry

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FULL ORBIT SERVICE . . . dramatically new! Different! Profitable for you! It's International Minerals' buyer-supplier teamwork . . . an idea only 3 months in the field and already making solid progress for users.

FULL ORBIT SERVICE picks up where others leave off. It's more than product and technical help . . . FULL ORBIT SERVICE reaches deep into every phase of the fertilizer business . . . puts the entire International organization on your staff. It combines every marketing and promotional energy into a *planned* business-building program for you.

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Administrative Center – Skokie, Illinois

THE MAN WITH THE ★ MULTIWALL PLAN

UNION
PACKAGING SPECIALIST
"WHITEY" CAMPBELL

shows packer how to pocket $85,000

$85,000! That's the *annual* dollar savings one user of Multiwall bags will enjoy as a result of a recent Union packaging survey.

The survey, made by Union Packaging Specialist "Whitey" Campbell, showed that: (1) $57,000 a year could be saved simply by switching the company's 3-ply domestic baler bags to 2-ply's. (2) reinforced sewing construction on 100-lb. packages would save 20# basis weight per bag . . . and additional thousands of dollars in costs depending on the number of bags used.

Union Multiwall Recommendations are based on this 5-Star Packaging Efficiency Plan

- DESIGN
- EQUIPMENT
- CONSTRUCTION
- SPECIFICATION CONTROL
- PLANT SURVEY

These were the major recommendations made and put into effect through Union's 5-Star Packaging Efficiency Plan. Total savings are expected to amount to more than $85,000 when all improvements are completed. How much could this plan save you?

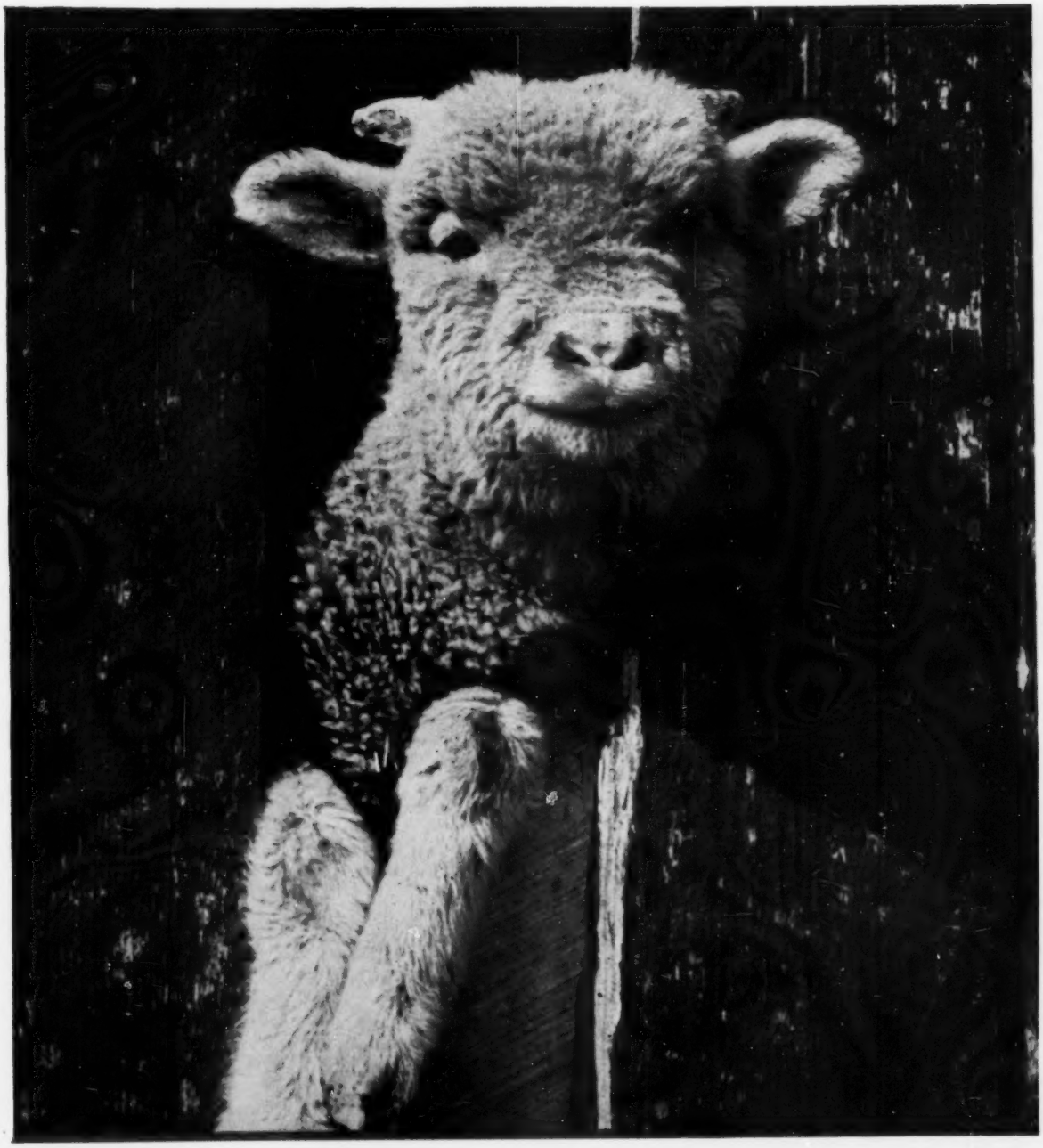
Better Multiwall performance through better planning

union camp

UNION'S PACKAGE ENGINEERING DEPARTMENT will study your Multiwall bagging methods and equipment and make appropriate recommendations, regardless of the brand of Multiwalls you are now using.

UNION MULTIWALL BAGS

UNION BAG-CAMP PAPER CORPORATION
233 BROADWAY, NEW YORK 7, N. Y.



"Who wouldn't stick his neck out for feed grown in potash-enriched soil?"

TO ALL FERTILIZER MANUFACTURERS: Now the United States Potash Company offers three outstanding grades of potash. USP's Higran and Higrade muriate, the purest agricultural muriates now on the market, are white potashes containing 62/63% K_2O. USP's Granular muriate of potash (pink-red) contains 60% K_2O. All three grades are non-caking and free-flowing throughout.

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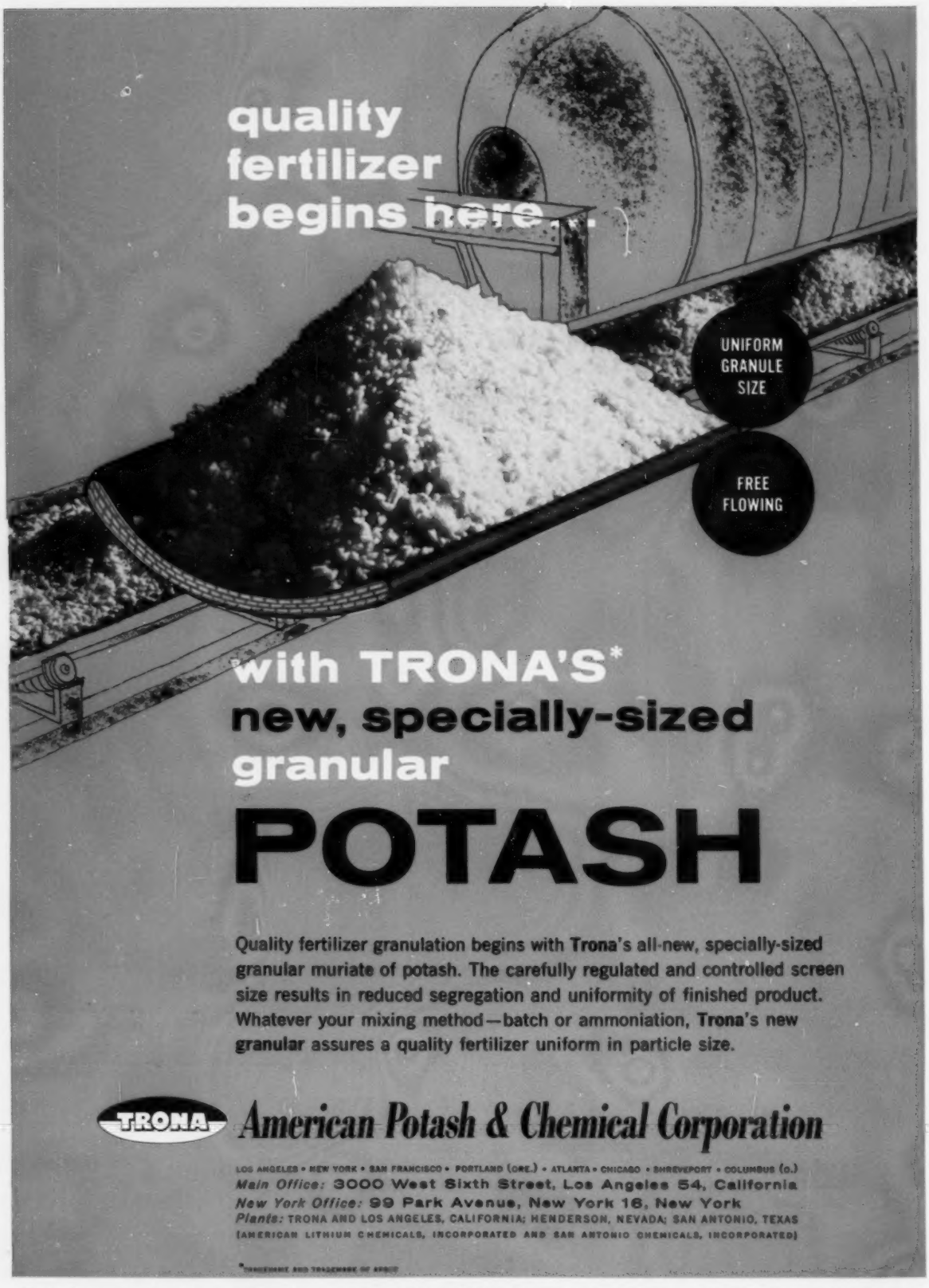

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new, specially-sized
granular

POTASH

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For uniformly conditioned mixed goods, use

Du Pont UAL-S

Here's how it works . . .

New Du Pont UAL-S permits you to take advantage of the well-known conditioning effect of sulfates in fertilizers. A small amount of ammonium sulfate added in a finely dispersed form as in UAL-S is equivalent to a much larger amount added dry to the mixture . . . ammonium sulfate means better, more uniform conditioning. All of your fertilizers will benefit from nitrogen derived from UAL-S, because it combines two efficient forms of nitrogen with ammonium sulfate to provide added sulfur . . . an essential plant nutrient with recognized agronomic value.

Regular mixtures cure well with UAL-S, are free-flowing and resist caking. In granular mixtures, UAL-S aids in producing good yields of hard, round, firm granules that store and distribute well. UAL-S is non-corrosive to fertilizer manufacturing equipment, including mild steel and aluminum, and it's safe—handles at moderate pressure, and there's no danger of flash fires.

Du Pont specialists can give you at-the-plant advice on proper use of UAL-S in your fertilizer mixtures. They stand ready to assist you in profitably formulating mixtures containing UAL-S. For further information on UAL-S, fill out and mail the coupon.

PROPERTIES OF UAL-S

Nitrogen Content	42.5%
Freezing Point	20°F.
Pressure	15 psi at 60°F.
Specific Gravity	1.13
Fixed to Free Ratio	.9 to 1.0

Composition: Parts/100

Urea	38.8
Ammonium Sulfate	10
Ammonia	27.1
Water	15.1
CO_2	9.0

Du Pont UAL solutions in mixed fertilizers have helped American farmers grow better crops for 25 years.

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Wilmington 98, Delaware

Dear Sirs: Please send me more information on UAL-S.

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Firm_____

Address_____

City_____ State_____

JUST AROUND THE CORNER

By Vernon Mount

NEW IMPETUS to the recovery is being supplied by the Mid-East situation. Not that there will be any added military spending – at least not unless things get really hot out there; not that there is any real problem of scarcity ahead.

CONSUMERS, however, always check over their durable goods, such as refrigerators and the like, to make sure they are in good working order against war-time freezes. This brings on consumer buying, especially as the corallary is that jobs will be safer.

INDUSTRY does the same; stocks up on basic materials that might be frozen, or which are imports.

COMMERCE checks its inventories, finds them low – and lifts the lid, at least slightly.

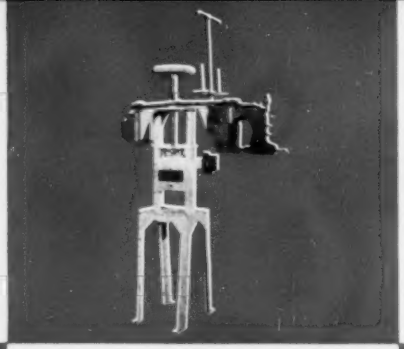
PSYCHOLOGY, which largely brings on recession, can also end it.

Yours faithfully

Vernon Mount

Save Money with SAVAGE Bagging and Shipping Equipment

economy through simplicity . . .



Several of our customers . . .

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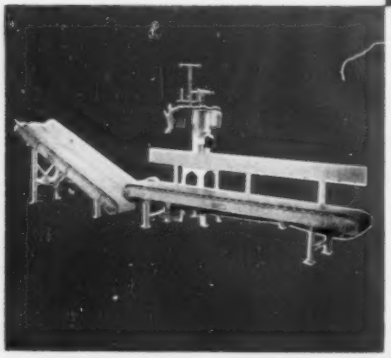
Simplified Rugged Sewing Machine Stands

$425.00 f.o.b. Norfolk, Virginia

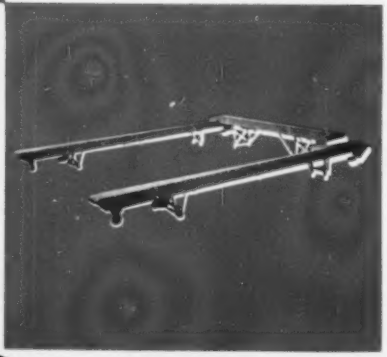


Truck or Warehouse Loading Conveyors

Power Driven Horizontal and Inclined Conveyor

$1,200.00 f.o.b. Norfolk, Virginia

Savage Equipment costs less because of design simplicity. Easy to maintain. Full access to all moving parts.



Write for FREE bulletin. Learn how Savage bagging and shipping equipment can save you money.

K.E. Savage Co.

823-C West 21st St. Norfolk, Virginia

New!

from International Paper

TYON

An improved anti-skid treatment for Multiwall Bags!

Here is an anti-skid treatment for multiwall bags that really works. Inclined Plane tests of bags treated with "Tyon" show:

- *"Tyon" is 20% better than ordinary anti-skid treatments*
- *30% better than rough kraft*
- *40% better than standard kraft*

You can cut breakage loss—and danger from slipping, creeping stacks in the warehouse and on your trucks. Bags treated with "Tyon" stack to stay. They cling to pallets. Offer firm grip for fast, safe loading and unloading.

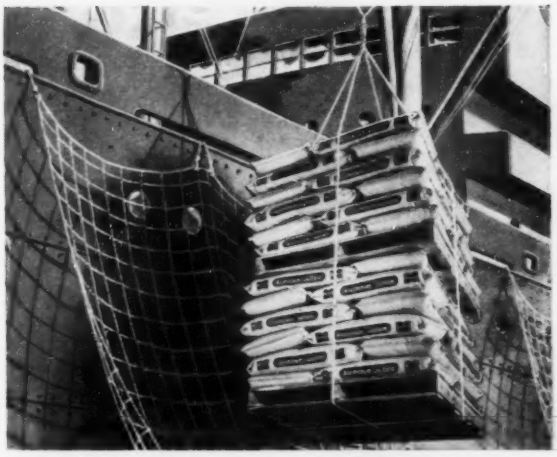
Remember, you get lots of advantages—with a lot of savings—when you specify multiwall bags treated with "Tyon"... another product of International Paper's long research and experience.

TYON

Look for this trademark on the bags you buy.

Send coupon for samples and full information

Up ramps and over bumps, bags treated with "Tyon" sit tight. *Allow faster handling.*



Stacked high or riding a sling, they cling. *Safer—resist slip and creep.*

Over bumpy roads, around curves, they ride—don't slide. *Eliminate breakage—speed delivery.*

your most dependable source of supply . . .

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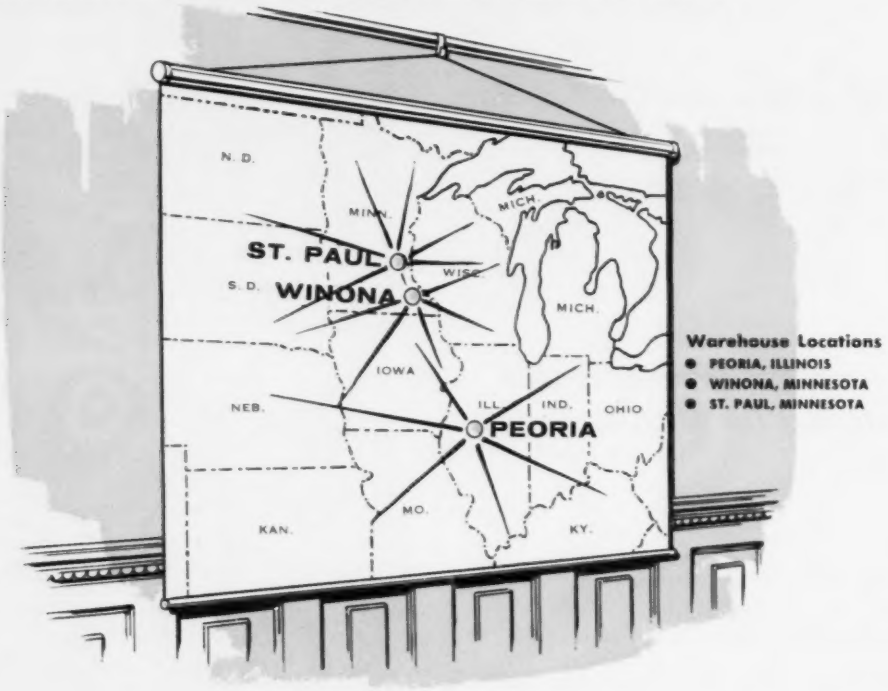

Warehouses centrally located at St. Paul, Minnesota, Winona, Minnesota, and Peoria, Illinois, have been established by U.S.P.P. to better serve the fertilizer industry . . . Improved delivery when you need it most . . . quality being constantly improved through research . . . many other advantages are yours when you buy U.S.P.P.

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TENNESSEE CORPORATION

NOTICE ANYTHING DIFFERENT ABOUT THESE MULTIWALLS ?

Bemis SINGLE GUSSET Multiwalls are being used by the Davison Chemical Company, Division of W. R. Grace & Company, Baltimore, Maryland. The single gusset bags have good stacking qualities. They palletize well, and the filled pallets are stacked three high. In addition, these new Bemis multiwalls give improved performance on the packer.

Yes, they are different.

For one thing, they are Bemis SINGLE GUSSET Sewn Valve Multiwalls . . . another Bemis *first*. (They stack so uniformly, you have to look closely to notice the single gusset construction.)

But the BIG differences are the ones you will see in the packing performance where you get uniform filling, steadier production and greater economy. Bemis SINGLE GUSSET Multiwalls provide these important time- and labor-saving benefits:

1. The flat tube side, opposite the valve, provides more room for the product flow during filling.

2. The additional space in the corner helps prevent blowout.

3. Fertilizer does not back up and clog the filler spout.

And still another important point—the additional usable space created by the flat tube corner often permits the use of a shorter bag, *which would save you money*.

General Offices—408 Pine Street, St. Louis 2—Sales Offices in Principal Cities

HOW WELL DOES TREBO-PHOS* GRANULATE?

Cyanamid's Triple Superphosphate in typical commercial run produces granular 5-20-20 of outstanding quality.

1. **EQUIPMENT**— TVA Continuous Feed Ammoniator; Co-current Dryer; Con-current Cooler

2. **FORMULA**

MATERIALS	LBS
TREBO-PHOS Triple Superphosphate — (APA 48.28%; Ins. 1.04%; H_3PO_4 3.09%; Moisture 7.25%.)	628
Normal Superphosphate	493
Nitrogen Solution: (25% NH_3; 69% NH_4NO_3)	62
Anhydrous ammonia	88
H_2SO_4, 66° Be	130
Potash	645

3. **RESULTS**

Production rate: 20 tons per hour
Through-put production: 82%
GRANULATION: EXCELLENT

WRITE, WIRE OR PHONE FOR FULL INFORMATION. OUR REPRESENTATIVE WILL BE GLAD TO CALL. NO OBLIGATION ON YOUR PART

*TRADE MARK

CYANAMID

American Cyanamid Company, Agricultural Division, Phosphates Department
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Special Problem? New multiwall developments may be the answer. Write Raymond Bag Corporation, Research & Development Division, Middletown, Ohio.

Raymond
BAG CORPORATION
A division of Albemarle Paper Mfg. Co.
MIDDLETOWN, OHIO • RICHMOND, VA.

"Confidentially, the men who know the most about production equipment... buy Sackett"

GET THE RIGHT ANSWER TO YOUR PRODUCTION PROBLEMS get Sackett

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THE A. J. SACKETT & SONS CO.
1727 S. HIGHLAND AVENUE
BALTIMORE 24, MARYLAND

Can Industry Use More Farm Products?

Action to increase industrial utilization of farm products, using processes already developed in the laboratory, is advocated by Dr. Odin Wilhelmy, Jr., of Battelle Memorial Institute in an article in the current issue of the 'Battelle Technical Review.' Dr. Wilhelmy, an agricultural economist at the Columbus, Ohio, research center, cites the fact that a commission appointed by President Eisenhower reports that over 300 such processes have been developed in Department of Agriculture laboratories, but are not being applied.

"The surface has only been scratched," declares the Battelle economist. "The full potential of chemurgy is far from being realized."

"Chemurgy" is defined as the employment of chemistry and other sciences for more efficient use of farm crops and residues, and to develop new crops. A number of economic obstacles need to be overcome in order to gain the benefits of chemurgic discoveries, says Dr. Wilhelmy.

As an example of one problem, he suggests that to lessen the cost of transporting high-bulk materials such as straw or cornstalks, portable units on trucks or railroad cars might process such materials on or near the farm before they are moved to industrial centers. A portable unit might convert cornstalks into a liquid concentrate, for instance.

Fluctuation in farm production due to causes such as weather might be partially offset by preserving, concentrating or stockpiling products, says the research economist. Also, the quality and prices of industrial products made from agricultural materials may in some cases need to be made more competitive with synthetics. Dr. Wilhelmy adds that agricultural raw materials are "notoriously unstable in price," posing a problem to industries based upon them.

The Battelle economist suggests a twofold program to reap the benefits of chemurgy. One phase is "to get more promising laboratory-proven processes off the shelf and into Commercial production." The other phase is a "longer range effort to explore and expand chemurgy."

Outlays for agricultural research in the United States are only about one per cent of total farm cash receipts, Dr. Wilhelmy points out, as compared to research spending of three per cent of gross sales by manufacturing industry.

Added income to farmers and others, relief of federal burdens occasioned by agricultural surpluses, and the standby value of chemurgic know-how in case of national emergency are advantages cited by the Battelle economist for a strengthened program of chemurgic research.

Research

Gamma rays do things to plants all right, but not all of them are good. That is the conclusion to date on experiments in the Brookhaven National Laboratory's atomic farm at Upton, L. I. Tobacco leaves turned out stringy and cord-like; gladiolas were dwarfed. On the other hand, useful plant mutations have developed: peaches that ripen 2 weeks earlier; another group of peaches that ripen 2 weeks later; a navy bean that is disease-resistant. The tests continue . . . we hope to tell you more when the 1959 results come in. ♦

Tomato growth speeded up 25% at the University of California when the seeds were soaked in a solution containing 1,000 parts of gibberellic acid per million. Speed stepped down as the gibberellic content was reduced. ♦

Tomato growth at Campbell Soup Co. was increased from 19.67 tons per acre to 25.79 when they controlled weeds with polyethylene film as a mulch.

♦

Aching backs may be relieved in Asia through the research of University of Michigan. You have to bend over to work with rice. But these U.M. researchers have found a way to double the length of rice stems. Oddly this has been the result of the compound derived from a rice disease the Japs call "the foolish seedling disease." But when gibberellic acid grows the stems—that's a different matter!

♦

New Mexico AES has farmers all through the Mesilla Valley testing the ability of cotton leaves to absorb urea spray. The conditions are very well diversified, and the results should be of major interest when reported.

HELP YOURSELF TO BIGGER PROFITS

PHOSPHATE PRODUCTION
No other process begins to compare with *way-ahead* Sackett SUPER FLO in making normal, fortified and triple super-phosphates of premium quality at *way lower* cost.

MIXED GOODS MANUFACTURE
Your investment in the latest Sackett Methods of producing conventional fertilizers is *guaranteed* to pay handsome returns. We are anxious to prove it.

MODERNIZATION PROGRAMS
Step ahead of competition by entrusting your fertilizer expansion and modernization facility programs to our care. Many of the most forward-thinking fertilizer producers are glad they did.

GRANULAR FERTILIZER
Sackett Equipment leads the field in Granular Production.
The names of the fertilizer companies who have selected Sackett Granulating Processes above all others, read like a "Who's Who in Industry."

NEW PLANTS
Invest your dollars wisely by having Sackett build your new plant. We do the whole job . . . from the inception stage thru building construction and equipment fabrication to operating plant. See us for guaranteed results.

There is nothing that appeals to a man's reason more than plain facts. And, one plain fact is this . . . you can help yourself to bigger profits by resolving *now* to replace wasteful obsolete plant equipment with the latest rock-bottom cost methods as exemplified in Sackett Production Processes and Materials Handling Equipment. Why not start the ball rolling by writing or phoning us today?

THE A. J. SACKETT AND SONS COMPANY
SACKETT EQUIPMENT
BALTIMORE • MARYLAND

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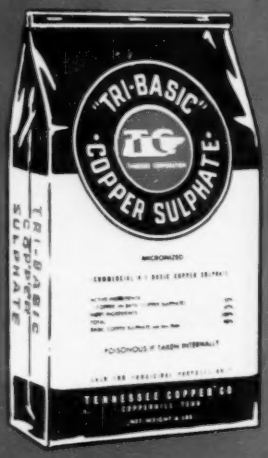
Architects and *Manufacturing* Engineers to the Fertilizer Industry Since 1897.

America's Foremost *Creative* Designers & Builders of Commercial Fertilizer and Superphosphate Plants . . . Related Production Equipment



The Versatile Fungicide

TRI-BASIC COPPER

Is there another Fungicide offering these advantages?

- Longer Protection
- Easy to Apply
- Economical
- Upgrades Quality of Fruits & Vegetables
- Longer Shelf Life
- Corrects Copper Deficiencies
- Effective Control
- Always Dependable
- Compatible
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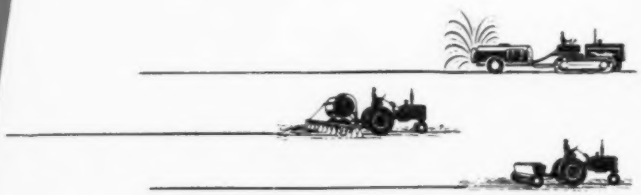

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Arcadian® News

Volume 3 | For Manufacturers of Mixed Fertilizers | Number 9

Hopewell Plant 30 Years Young!

Called "one of the greatest chemical achievements in America!"

Looking back over the years to 1928, Nitrogen Division, Allied Chemical, can take pardonable pride in its Hopewell, Virginia, plant. For Hopewell started BIG (biggest nitrogen plant in the country) and is probably the largest in the world today! In addition, this plant helps Nitrogen Division offer fertilizer producers *the most complete line* of nitrogen products (backed by the *most* nitrogen experience) in the industry!

First Units Built in 1928

In a real sense, the Hopewell plant was the culmination of all the ammonia research and experimentation begun at Laurel Hill, Long Island, N. Y. by the group that later formed Nitrogen Division . . . continued at Sheffield, Alabama . . . and carried into commercial production by Allied Chemical at Syracuse, New York. By 1928 the first units at Hopewell were completed. From the start, plant production kept increasing, until—by the end of 1930—it approached 200,000 tons of nitrogen a year! At the time, this was the largest output in the world outside Germany!

Key Nitrogen Unit in National Defense

For the first time, with the construction of the Hopewell plant, the United States became independent of foreign supply of nitrogen. No longer would there be anxious moments over availability of nitrogen materials for fertilizers in peace, or munitions in war. In 1941, Nitrogen Division expanded facilities at Hopewell, making it the most important nitrogen unit in the nation's defense program.

Hopewell Tomorrow

Termed, in its early days, "one of the greatest chemical achievements in America", the Hopewell plant has fulfilled its promise by constant growth and great flexibility in meeting the changing demands of the business it serves. It will continue its role as Nitrogen Division headquarters for nitrogen research and development.

Working closely with the technical staffs of sister plants at South Point, Ohio, and Omaha, Nebraska, Hopewell will maintain a continuing search for more and better nitrogen solutions for fertilizer production. The pay off is *yours*—in *more* business . . . *bigger* profits! Standardize on Nitrogen Division!

Arcadian News for Fertilizer Manufacturers . . . . . from NITROGEN DIVISION

Allied Chemical Research Created and Developed Nitrogen Solutions

Use of superphosphate as an absorbent for ammonia goes back as far as 1873. However, this process was not to attain any commercial importance until development of the synthetic ammonia process many years later.

In 1921, at Syracuse, New York, Allied Chemical became the first to produce synthetic ammonia commercially in the United States. The fertilizer industry was quick to see and capitalize on the advantages offered by ammoniation of superphosphate. Cost-wise, the formulation of mixed fertilizer with nitrogen, using low-cost ammonia, was very attractive. What made it even more attractive was the fact that superphosphate, the other component of the reaction, was already the mainstay of the mixed fertilizer industry. In fact, use of nitrogen in the concentrated form of ammonia, not only simplified formulation but actually improved the physical condition of the superphosphate and reduced curing time.

However, the proportion of nitrogen that could be put into a mixture in the form of ammonia proved to be limited to the absorption capacity of the superphosphate, and by the tendency of overly alkalized phosphate to revert to insoluble form.

Development of Solutions

In February, 1929, an Allied Chemical researcher reasoned that he could put additional quantities of nitrogen into superphosphate by making use of the solvent power of ammonia on other nitrogen compounds. Experiments soon proved him right—and Allied Chemical scored another "first": the ammoniation of superphosphate with ammoniacal salt solutions.

Test experience with this new method showed that one of the most important salts that could be used in ammoniation solutions is ammonium nitrate. Indeed, this combination of nitrate nitrogen and ammonia nitrogen proved to be desirable from an agronomic viewpoint for the following reasons: 1) Ammonium nitrate is extremely soluble in ammonia, providing solutions of high overall nitrogent content. 2) Being a commercial chemical in great supply, ammonium nitrate is economical. 3) With the proper blending of ammonia, ammonium nitrate and water, it is possible to obtain solutions that permit ammoniation of many types of mixed fertilizers with safety, convenience and adaptability.

First Commercial Use

In October, 1929, Allied Chemical supplied a solution of ammonium nitrate in ammonia to ammoniate approximately 100 tons of superphosphate in a plant test at Norfolk, Virginia. This was the first commercial ammoniation of fertilizer with an ammoniacal ammonium nitrate solution.

The solution used at Norfolk was the forerunner of Allied Chemical's NITRANA type solutions, introduced to the fertilizer industry in 1932. On April 13, 1937, Allied Chemical was granted U.S. Patent No. 2,077,171 to cover use of the NITRANA type solutions in ammoniation. Since that time, use of NITRANA solutions has expanded rapidly, and they are now one of the largest sources of nitrogen used by the mixed fertilizer industry.

Another benefit from ammoniation with solutions containing highly soluble salts such as ammonium nitrate is the development of temporary plasticity in the mixtures. During ammoniation at high rates, temperatures are attained that develop sufficient liquid phase in the mixture to confer good granulating characteristics. This incidental reaction has greatly aided the development of granulated fertilizers in recent years.

Allied Chemical chemists and engineers have known about and made laboratory studies of this particular aid to granulation since the early years of ammoniation. As far back as March, 1938, in Baltimore, Allied Chemical engineers were supervising plant scale tests of granulation of commercial mixtures with NITRANA solutions. During the 20 years since these tests, Allied Chemical has continued to pioneer in developing improved granulation techniques.

What's in the Future?

Nitrogen Division of Allied Chemical will continue its highly specialized research and development work in a never-ending search for new and improved nitrogen solutions. As in the past, the results of these efforts will be made available to producers just as soon as possible.

Meanwhile, make *your* future more profitable by making Nitrogen Division your headquarters for nitrogen products!

Entrance to one of the Nitrogen Division, Allied Chemical, Research Laboratories

Make Your Own Ureaform Nitrogen with N-dure®

Easy to Use in Regular Ammoniating Equipment

A product of Allied Chemical research, N-dure urea-formaldehyde solution is the new chemical that makes it easy for you to upgrade the quality and the mechanical condition of your mixed fertilizers.

By using N-dure, in combination with urea, along with nitrogen solutions and other ingredients in the manufacture of mixed fertilizers, you can produce your own ureaform nitrogen right in your own plant during the process of mixing fertilizer. For each 20 pounds of N-dure and 40 pounds of urea you produce one unit of high-quality ureaform nitrogen.

The result is a high-grade, granular-type, non-dusty, non-segregating mixed fertilizer that releases nitrogen slowly over the entire growing season. The fertilizer is odorless, easy-to-spread and non-burning.

N-dure is Easy to Use

Instead of adding ureaform nitrogen to your fertilizer as a separate ingredient, it pays to make your own ureaform nitrogen during the mixing process. You get a better quality product at about half the price you would pay for a ureaform material. And the ureaform nitrogen you make by using N-dure is chemically blended with the other ingredients in your mixed fertilizer.

N-dure is easy to use in your standard ammoniation apparatus, with, at most, only a few minor alterations in methods and equipment. Even where maximum conversion to this process is desired, the required alterations are reasonable in the light of the profitable results. Fertilizer manufacturers are finding that it is just as easy to learn how to use N-dure as it was to learn how to use nitrogen solutions.

Wide Variety of Ratios

N-dure enables you to economically formulate a wide variety of combinations of quickly-soluble and long-feeding nitrogen. You can easily control the ratio of fast-acting nitrogen to long-lasting nitrogen. You can make high-nitrogen, high-analysis fertilizers that are non-burning and leach-resistant.

The development of N-dure has opened up bright new vistas of profit for the fertilizer manufacturer. Fertilizers made with N-dure are now being used on many specialty crops. Fertilizers made with N-dure would have been ideal for many field crops under heavy rainfall conditions such as we had last Spring.

The Home Garden Market

But the biggest market for fertilizers made with N-dure today is the non-farm market. Twenty-two million home gardeners use more fertilizer per acre than farmers and pay a higher price for it. Highways, golf courses, playgrounds, cemeteries and nurseries are also big users of fertilizers.

These consumers prefer one-application, high-analysis, labor-saving fertilizers. That's why the new mixtures made with N-dure are proving very attractive. It will pay you to take advantage of this new interest in fertilizers to increase your sales and your profits.

Get the Facts!

Find out how easy it is to use N-dure to make your own ureaform nitrogen while you are making your mixed fertilizers. The demand for fertilizers containing enduring nitrogen is growing fast! Get your share of this booming market with N-dure. A Nitrogen Division technical service representative will be happy to show you how simple it is to fit N-dure into your production. Contact Nitrogen Division, Allied Chemical, 40 Rector Street, New York 6, N. Y.

HERE'S THE BIG LINE OF Arcadian® NITROGEN SOLUTIONS

When you purchase your nitrogen requirements from Nitrogen Division, Allied Chemical, you have many different nitrogen solutions from which to select those best suited to your ammoniation methods and equipment. You are served by America's leading producer of the most complete line of nitrogen products on the market. You get formulation assistance and technical help on manufacturing problems from the Nitrogen Division technical service staff. You benefit from millions of tons of nitrogen experience and the enterprising research that originated and developed nitrogen solutions.

	CHEMICAL COMPOSITION %						PHYSICAL PROPERTIES		
	Total Nitrogen	Anhydrous Ammonia	Ammonium Nitrate	Urea	Water	Neutralizing Ammonia Per Unit of Total N (lbs.)	Approx. Sp. Grav. at 60° F	Approx. Vap. Press. at 104° F per Sq. in. Gauge	Approx. Temp. at Which Salt Begins to Crystallize °F
NITRANA®									
2	41.0	22.2	65.0	—	12.8	10.8	1.137	10	21
2M	44.0	23.8	69.8	—	6.4	10.8	1.147	18	26
3	41.0	26.3	55.5	—	18.2	12.8	1.079	17	-25
3M	44.0	28.0	60.0	—	12.0	12.7	1.083	25	-36
3MC	47.0	29.7	64.5	—	5.8	12.6	1.089	34	-30
4	37.0	16.6	66.8	—	16.6	8.9	1.188	1	56
4M	41.0	19.0	72.5	—	8.5	9.2	1.194	7	61
6	49.0	34.0	60.0	—	6.0	13.9	1.052	48	-52
7	45.0	25.3	69.2	—	5.5	11.2	1.134	22	1
URANA®									
6	42.0	19.5	66.3	6.0	8.2	9.3	1.178	10	34
10	44.4	24.5	56.0	10.0	9.5	11.0	1.108	22	-15
11	41.0	19.0	58.0	11.0	12.0	9.2	1.162	10	7
12	44.4	26.0	50.0	12.0	12.0	11.7	1.081	25	- 7
13	49.0	33.0	45.1	13.0	8.9	13.5	1.033	51	-17
15	44.0	28.0	40.0	15.0	17.0	12.7	1.052	29	1
U-A-S®									
A	45.4	36.8	—	32.5	30.7	16.2	0.925	57	16
B	45.3	30.6	—	43.1	26.3	13.5	0.972	48	46
Anhydrous Ammonia	82.2	99.9	—	—	—	24.3	0.618	211	—

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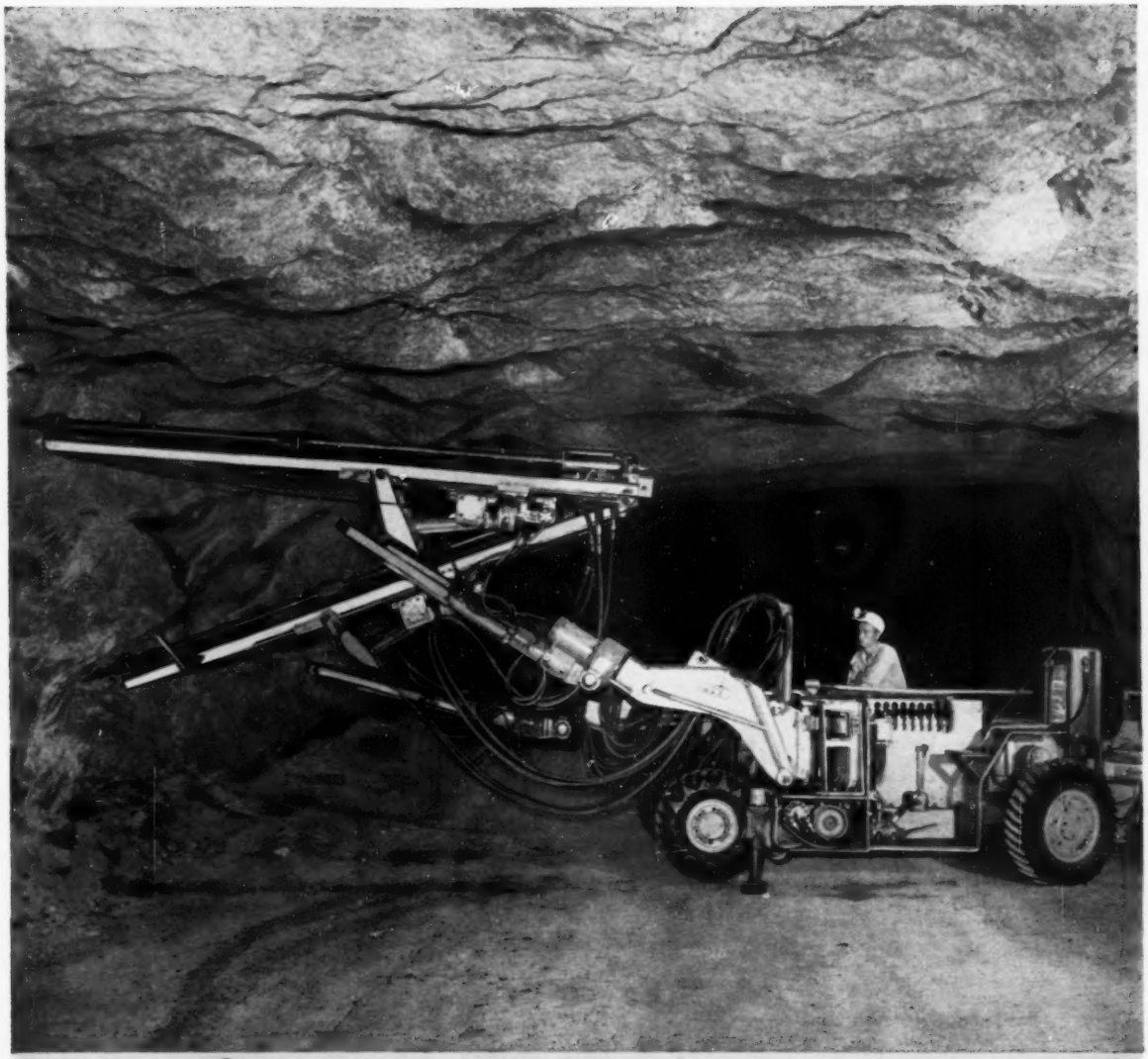

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Communist CHINA PLANS

One of the standard designs for 8000-ton plants planned for each of China's 2000-plus counties.

Fertilizer Plants In 2,000 Counties To

by Hsu Chien

For many years before the Communist regime, the Chinese fertilizer market was dominated by products of Britain's Imperial Chemical Industries. China, an agricultural country, began to manufacture its own chemical fertilizer only about 20 years ago.

The first fertilizer plant in China —a private establishment, the Yung Li Chemical Works—was established in Nanking early in 1937. Its planned annual capacity was 50,000 tons of ammonium sulphate. But within six months it was deliberately demolished by Japanese bombers. Around the same time, the Japanese-owned Manchurian Chemical Company set up a fertilizer plant in Dairen, in the northeast, but nearly all its products were shipped to Japan.

V-J Day found China with this plant in Dairen and the shell of the chemical works in Nanking. The Dairen plant had been so badly damaged by the occupationists on the eve of Japan's surrender that the Kuomintang did not even try to put it back into production. The Nanking plant was gradually restored, but shortage of fuel and raw material never allowed its output to rise to more than 27,000 tons of ammonium sulphate in 1949.

Phosphate fertilizer plant, China's largest, under construction at Nanking.

In effect, there was virtually no chemical fertilizer industry in China when the Communist government took hold. Nor was foreign exchange available to pay for big imports of this vitally urgent product. And even if it were produced or imported, there was little surplus purchasing power and even less incentive for the average peasant to buy and use it. The peasant relied mainly on farmyard manure and "nightsoil;" and though he showed great skill in composting and applying it, this was woefully inadequate for China's needs.

The importance of building up a chemical fertilizer industry was clear to the new regime from the start. The Japanese had reckoned that they had made the restoration of the Dairen plant impossible for at least 10 years. In fact, it was rebuilt in May 1951 and two years later was further extended. The Yung Li Chemical Works in Nanking, now a joint state-private enterprise, has been enlarged. By now the output of the two plants is several times their peak 'pre-liberation' levels, quite apart from the greatly improved quality of their products. The Dairen Chemical Works is producing 250,000 tons a year and the Yung Li Works has reached 170,000 tons.

But of course, China cannot rely on just these two plants. During the past five years of planned economic development, new plants, big and small, have been built in all parts of the country. A nitrogenous fertilizer plant has been completed and put into operation in Kirin, northeast China, with the aid of the Soviet Union. It has up-to-date machinery, its production is electrically controlled and its equipment is well enclosed and explosion-proof. Work has started on three similar large, up-to-date plants. Equipment with an annual capacity of 200,000 tons of superphosphate in powder form has been installed at a large mechanized phosphorus fertilizer plant now under construction in Nanking, China's first plant of its kind.

In addition, six smaller plants—each with an annual capacity of above 10,000 tons—have been built in different provinces of the country. By 1957, China's production reached 800,000 tons of chemical fertilizer, three and a half times the highest pre-Communism figure, but this was still a fraction of the country's real requirements. It was the first beginnings.

China's huge population has only a meagre acreage of farmland per head, and the population is growing at the rate of over 13 million a year. Averaged over the population, the farmland works out at no more than three mou (half an acre) per capita. For China to advance economically, it is vitally important to step up the country's output of food crops and, though something can be done towards this end by the more costly method of reclaiming wasteland, the use of more chemical fertilizer on the existing land is obviously one of the major measures.

To make a comparison — if the sum of two billion yuan (roughly 294 million pounds sterling) is invested in land reclamation, it can open up 1,900,000 hectares,* which could add some 2,150,000 tons of

* *A hectare is approximately 2½ acres*—Editor's Note.

Overall view of new chemical fertilizer plant at Kirin, completed in 1957 and equipped with Soviet machinery.

County-financed plants will produce 8000 annual tons, use bamboo and wood for steel in construction

Produce 15 Million Annual Tons by 1967

grain. If invested in expanding the chemical fertilizer industry, the enterprises built with this money will turn out a total of four and a half million tons of fertilizer a year, enough to add 12,750,000 tons of grain yearly. In other words it is six times the reclamation profits.

With such considerations in mind, China's revised draft program for agriculture which has been discussed all over the country, and the Second Five-Year Plan which went into operation in January, put tremendous stress on the chemical fertilizer industry. Steep goals have been set—five to seven million tons by 1962, the end of the Second Five-Year Plan, and approximately 15 million tons by 1967, the end of the Third Five-Year Plan.

To reach these goals, an immense building program has been worked out. Existing plants are being expanded, big new plants built and scores of cities, provinces and counties encouraged to erect as many medium-sized and small plants as possible. Standard designs have been worked out to accelerate the program. Projects built to these designs generally take only 6 months for very small plants or 15 months for medium plants from the start to full operation. The new plants are being equipped mainly with China-made machinery, as the machine-building industry has now grown up.

Not only will output be considerably increased by the end of the Second Five-Year Plan in 1962, but the variety of products will include ammonium chloride, urea, calcium cyanamide and triple superphosphate, apart from the ammonium sulphate, ammonium nitrate and calcium superphosphate which China is already manufacturing.

This year alone, apart from the four large new fertilizer plants already under construction when the year began, expansion is being carried out at the three large existing plants and work will start on 10 large new plants, located in important grain producing provinces. In fact, investment in the fertilizer industry this year is scheduled to double last year's and to approach the combined total for the four years from 1953 through 1956. The work on these 17 plants will add an annual output of 1,688,000 tons of nitrogenous fertilizer (in terms of ammonium sulphate), 800,000 tons of phosphate fertilizer and 100,000 tons of nitro-lime.

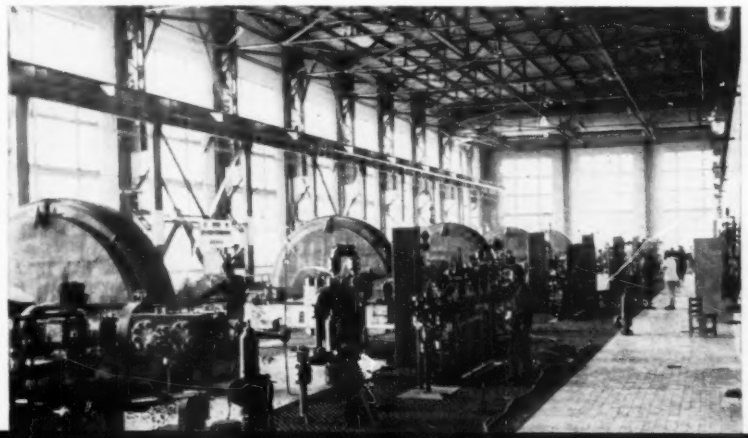
To meet urgent needs arising from the current unprecedented "leap forward" in agriculture, the Ministry of Chemical Industry has worked out plans to help set up one small fertilizer plant in each of the country's 180 administrative regions (an administrative region consists of several counties) and a smaller one in each of the 2,000-plus counties, based on an experimental pilot plant project which went into construction in Peking early in April. This pilot project will not only provide data on standard designs, but give experience in the construction of such plants and the training of technical staff to man them.

A standard design already on the Ministry of Chemical Industry's drawing boards provides a typical small plant for a county, with an annual output of 8,000 tons of ammonium bicarbonate; it can be built in about six months, occupies only two thirds of a hectare of land, and costs, it is estimated, about three and a half million yuan (equivalent to some 500,000 pounds sterling). The cost includes one million yuan for a power station to service the plant. This total cost is today within the means of an average county in China. Only short-term training is required for the staff to work the plant as many processes will be simplified. And in building this kind of plant manual labor can be used instead of machinery, with wood and bamboo replacing iron and steel as far as posible.

A typical design for a bigger plant, to be built by an administrative region, envisages an annual capacity of 40,000 tons of ammonium bicarbonate. It involves an investment of about 15 million yuan, including five million for a power station.

Raw materials supply presents no problem. The major raw materials are coal, air and water, and rich coal reserves are to be found all

Portion of the synthetic ammonia unit at the modern Kirin plant.



over China. As for equipment, the steel products required can now be supplied in many parts of the country.

If only 1,000 counties build fertilizer plants in this way in the next few years, this will mean an output of eight million tons added to the total turned out by the larger plants.

Latest statistics show that, in addition to the large plants being built, work on 21 medium-sized plants with an annual capacity of 100,000 tons each, seven small plants with an annual capacity of 40,000 tons each and 36 smaller plants with an annual capacity of 8,000 tons each will be started immediately in various provinces, administrative regions and counties. When these 64 plants and a pilot plant each in Peking and Shanghai are completed, their combined output is estimated to be more than three times the country's 1957 output.

Taking all these factors into account, it is conceivable that by 1962 the annual output of chemical fertilizer will be well ahead of the plan and reach some 10 million tons. And by the time the Third Five-Year Plan gets going, and all counties and administrative regions have their own local chemical fertilizer plants, China may be turning out over 30 million tons a year, a third more that the United States' current output.

Generally speaking, the application of one kilogram of chemical fertilizer brings about an increase of some three to four kilograms of food crops or one to two kilograms of cotton in China, and saves labor. Fifteen kilograms of chemical fertilizer are easier to carry and equal in effect to some 1.5 tons of compost there. However, the use of compost and other organic manure will not be discontinued, even with the expected rise in chemical fertilizer production, for there is almost endless need for all forms of fertilizer in China.

Chinese cooperative farms in some provinces are now so enthusiastic about raising their crop yields that they are not simply waiting for any of the bigger plans to mature. With their own funds they are setting up small plants or workshops to prepare compost or manufacture chemical, bacterial and other fertilizers. In Szechwan, China's biggest grain producing province, cooperative farms have drawn up their own such schemes for the period of the Second Five-Year Plan which, taken all together, amount to an estimated investment of 150 million yuan. Similarly more than 2,000 workshops are being built, for the same purpose, in the various villages of remote Kansu Province in northwest China.

By this combined effort at all levels, from the village cooperative farm to the Ministry of Chemical Industry, China expects to solve its fertilizer problem—and by so doing help to solve the major problem of raising the living standards of the 600 million Chinese people.

Conservation Farming Profitable USDA Research Shows in Iowa

An investment of $3,714 in conservation practices over a 10-year period on a 160-acre Iowa farm can increase the operator's net annual income by about $1,500 by the tenth year, even though farm income is reduced somewhat during the years when the program is being launched, a U. S. Department of Agriculture study shows.

Farm economists of the Department's Agricultural Research Service and of the Iowa Agricultural Experiment Station analyzed a 160-acre farm in the hilly area of western Iowa to show what changes in farm organization are needed over a 10-year period to adjust profitably to a conservation system of farming.

The relatively high farm incomes and generally favorable weather during the last 10 years have made the period a good one to begin conservation farming. At the same time, rising costs and falling farm prices have encouraged farmers to try new farming practices in an effort to maintain profit margins.

Before any conservation adjustments were planned, the crop schedule on the test farm included 62 acres of corn, 53 acres of oats, and 41 acres of hay and pasture. Livestock included five milk cows, seven beef steers, and 154 hogs.

The operator could begin conservation farming by investing the first year in terracing, contouring, improved rotations, and additional fertilizer. Terracing, the study showed, would reduce soil erosion losses from 27 tons to 5 tons per acre annually, and could be established for about $320 ($4 per 100 feet of terrace), with an additional investment of $25 for seeding water courses. Seeding waterways before building terraces is usually recommended. Heavy applications of fertilizer would bring the total investment for the first year to $674.

Crop rotations that aid in conservation would include about 60 acres of corn, 40 acres of oats, and 56 acres of hay and pasture. The increase in hay and pasture from rotations and fertilization would allow the farmer to fatten three more steers the second year, and gradually work up to 21 steers by the tenth year. He would maintain his original number of hogs and dairy cows.

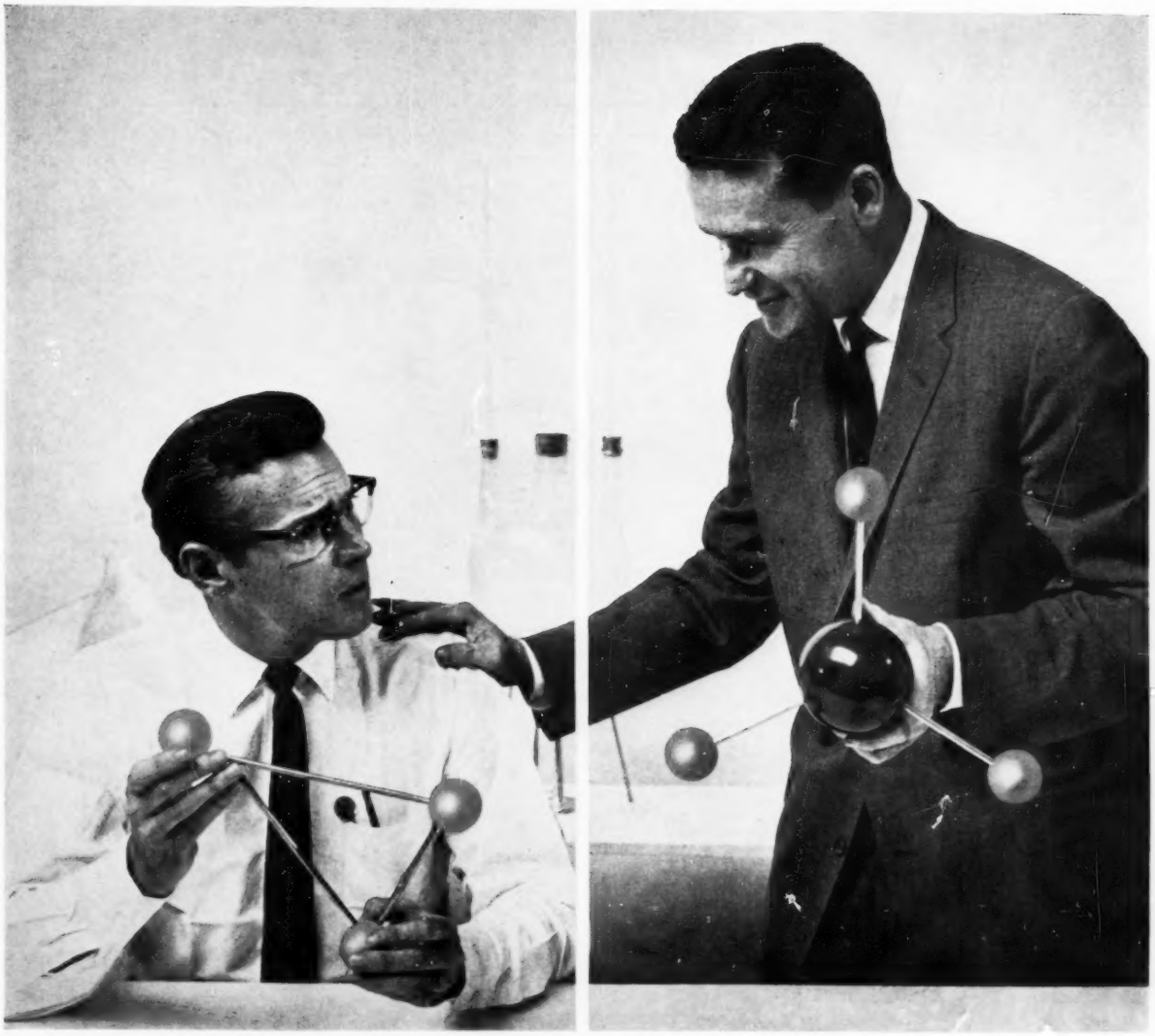
By the fifth year, the study showed, additional housing and equipment would be needed to feed the increased number of steers. This would require an outlay of about $1,050 if the operator bought materials and assembled a shed himself; otherwise it would cost about $200 more. To this would be added the cost of more steers to utilize the increased forage produced. Heavy use of fertilizer, of course, would add to the annual investment.

The progressive increase in income would result from combining conservation and other productive practices with a reorganization of the whole farm business. All farms might not be as productive as this test farm, where a conservation system was established without great difficulty, the economists pointed out. Land, the capital resources, and the labor are all involved in developing a conservation system. All function together in the farm plan.

Correction of July Cooperatives Item

In our July issue we published a brief discussion of the status of farmer cooperatives. In the course of this, comment on potash became garbled and made us seem to credit production to Central Farmers Fertilizer Co. which actually should have been credited to National Farmers Union. Synthetic nitrogen materials produced by Consumers Cooperative Association and St. Paul Ammonia Products appeared also to be credited to Central Farmers.

We regret that this error not only reached the printer, but was missed in the reading of proofs for the issue.



LET THE MAN FROM TEXACO HELP YOU WITH YOUR FORMULATION PROBLEMS

You can get experienced technical help in formulating a new nitrogen-containing fertilizer, or in bringing an old one up to date, just by calling Texaco. And you may avoid duplicating research that's already been done, because Texaco may have just the answer you need.

Whatever the prevailing soil conditions in your area, Texaco has the technicians and the facilities to help you to use nitrogen more profitably, and to produce a more effective and economical fertilizer.

Texaco's new facility at Lockport, Ill., offers other services, too. The ammonia produced is of high purity; it's delivered pure; and it's delivered to you right on schedule. There's a dependable supply, too, because Lockport's storage facilities are ample.

For fast, reliable ammonia service, call or write The Texas Company, *Petrochemical Sales Division*, 332 South Michigan Avenue, Chicago 4, Illinois, or 135 East 42nd Street, New York 17, N. Y.

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The International Scene

AUSTRALIA

Western Farmers Co-op Reports 13% Sales Rise

The annual report of Westralian Farmers Superphosphates Ltd. reports sales last year at 542,000 tons, up 64,000 tons from the preceding year's total. The report of the 30-year-old firm predicts this year's sales will top 580,000 tons to show a net gain of more than 25% for the two year period.

The Westralian organization stated that 344,112 tons of superphosphate were produced by its manufacturing company—Cuming Smith & Mount Lydell Farmers Fertilizers Ltd. — during the past year, while its subsidiary company, Albany Superphosphate Company Ltd., increased sales to 83,543 tons.

All five of the firm's works — Bassendeam, Fremantle, Geraldton, Bunbury and Albany—reported capacity production for the season. Extensions made at the Bunbury plant this year include an additional superphosphate shed and a second overhead travelling crane, and work is progressing on installation of additional dressing and bagging equipment at a cost to run more than $70,000. An additional dressing plant has already been completed and placed in operation at Geraldton. Additional superphosphate storage costing nearly $200,000 is under way at the Albany plant, where expanding production — expected to reach 100,000 tons this year—is also necessitating installation of a second overhead travelling crane along with an additional dressing plant and despatching equipment.

AUSTRIA

Production Continues Climb, But Most of It Exported

Production of fertilizers, backbone of Austria's chemical industry, climbed from 662,000 tons in 1956 to 786,00 tons in 1957 (as we reported here last month). The 1957 output, topping all previous records, was dominated by products of the Austrian Nitrogen Works at Linz, Upper Austria, which accounted for 724,800 tons of the nation's total production.

Tonnage from the factory at Linz represented an increase of nearly eighteen times its 1946 output of 39,500 tons. Of the factory's 1957 production, approximately 625,000 tons (75% of total) was exported.

Last year saw completion of a urea plant in Austria, but no figures have been revealed on its actual capacity, nor the eventual destination of its products.

BRAZIL

Production Expanding; 3 New Nitrogen Plants

Production of fertilizers is expanding in Brazil. The 1956 output of 109,000 metric tons of superphosphates and 6,769 tons of ammonium sulfate was 14 percent ahead of the previous year's production levels in each case. Data for 1957 are not yet available, but indications are that superphosphate was up about 15 percent and ammonium sulfate about 8 percent from 1956.

Three new faciilties for production of nitrogenous fertilizers are under construction or planned. A plant at Minas Gerais is expected to begin production in 1958 with an annual output of 25,000 tons of calcium nitrate and 5,000 tons of ammonia. A petroleum refinery in Rio de Janeiro also is preparing to make 20,000 tons of nitrogenous fertilizers annually in the form of ammonium-nitrate-lime and ammonia. The other project, which will be at Aratu, Bahia, is planned for 1960. There are 6 plants making superphosphates, 3 of which are in the Sao Paulo area and account for 90 percent of total capacity. Expansion of superphosphate capacity and production also is projected.

Of the 63,247 tons of phosphates produced in 1956, 73 percent was mined in the state of Sao Paulo. However, extensive deposits of phosphate rock occur in the Pernambuco area of northern Brazil, and the company mining phosphates there expects to expand output greatly. These phosphates are used directly for fertliizer as well as in the manufacture of superphosphates. Considerable quantities of mixed fertilizers are produced from domestic and imported materials.

Despite the recent marked growth in production of phosphatic fertilizers, imports during 1956 consisted of 106,000 tons of superphosphates, 119,000 tons of phosphate rock, and 12,000 tons of miscellaneous phosphatic materials. Imports of nitrogenous materials, largely Chilean nitrate and ammonium sulfate, totaled 133,000 tons. Potash is not produced in Brazil and 66,000 tons were imported, mostly as potassium chloride. Other imports were 15,000 tons of mixed fertilizers, natural organic materials, and unspecified materials. It is estimated that approximately 65 percent of the fertilizer materials consumed in Brazil during 1956 were imported, over 50 percent of which came from the United States. Germany, Chile, and North Africa were other leading suppliers.

The Brazilian fertilizer industry has found it difficult to compete with imported products because of high production costs and inadequate inland transportation. However, the government has been endeavoring to aid the domestic industry by allowing exemption of consumption taxes, permitting duty-free imports of processing machinery, reducing freight rates on the state-owned railway, establishing higher tariffs on fertilizer imports, and granting direct subsidies. The industry believes that it can produce all the phosphatic materials required, but dependence upon imports for much of the nitrogenous materials and all of the potash may continue for some time.

BRITAIN

Fertilizer Exports Up, Phosphate Imports Down

Value of Britain's manufactured fertilizer exports increased approximately 275% in 1957, as compared with 1956. Meanwhile, in the same period, United Kingdom imports of phosphate minerals declined nearly 7%.

The value of manufactured fertilizer exported during the past two years, expressed in British pounds sterling (value: $2.80 U.S.), is as follows:

Destination	1956	1957
Channel Islands	273,433	248,848
Rhodesia and Nyasaland	3,579	66,150
Mauritius	1,040	335,837
India	186,442	5,683
Federation of Malaya	34,322	412,180
Ceylon	12,134	1,039,412
Australia	34,125	319,632
Jamaica	59,376	74,884
Barbados	31,927	161,928
Trinidad	19,492	66,405
British Guiana	19,371	114,180
Other Commonwealth countries	89,660	569,158
Irish Republic	144,532	43,738
Foreign countries	179,836	625,314
TOTAL	1,089,269	4,083,409

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SOHIO

United Kingdom imports of mineral phosphates during the past two years were as follows:

Source	Tons 1956	1957
Nauru	100,249	123,644
Algeria	11,512	2,070
Tunisia	66,010	73,829
Southern Morocco	706,737	669,014
U.S.A.	289,650	229,100
Other countries	7,736	5,009
TOTAL	1,181,894	1,102,666

CANADA

Nova Scotia Sales Show Increase In 1958

Sales of fertilizers in Nova Scotia showed an increase this year over 1957, it was revealed at the August meeting of the Maritime Fertilizer Council at Kentville.

Nova Scotia's sales this year were 27,678 tons, up 2,749 tons. However, the province was the lowest in the three Maritime provinces in the total number of purchases. New Brunswick led with 62,144 tons, Prince Edward Island was next with 53,525.

The meeting, presided over by the retiring president, Frank P. Smith of Halifax, discussed the need to cut down on the number of formulae used, because too many mixtures are expensive and also confusing.

Since the Maritime provinces have an extremely wide range of soil types and a wide variety of crops, it was brought out that it would be difficult to cut down on the number of mixtures.

One suggestion advanced was to do away with prepared commercial fertilizer formulae and to let the farmer prepare his own to suit his own conditions.

CHILE

Nitrate Output Bounces, U.S. Still Chief Customer

Production of Chilean nitrate amounted to 1,321,000 metric tons in 1957, a 14-percent increase over that of 1956 but almost 15 percent below 1955 output. Exports were up about 5 percent to 1,255,000 tons in 1957. The United States was still the largest market, accounting for 45 percent of exports. Spain and France were next. Production and exports of potassium nitrate were 71,617 tons and 78,352 tons, respectively, in 1957.

DENMARK

Fertilizer Consumption Hinges On Farm Exports

Superphosphate, the only fertilizer made in Denmark, is produced solely by the Danish Sulphuric Acid and Superphosphate Factory, Inc. (Dansk Svovlayre-og Superphosphat-Habrik A/S), one of Denmark's key industries, at 3 plants in Kalundborg, Fredericia, and Nerresoundby. Output of 18-percent superphosphate set a record in 1956 and was about 10 percent greater than the preceding year's total, which, however, was a low for recent years. An increasing share, approximately 175,000 tons in 1956, consists of granulated superphosphate which is very popular with Danish farmers.

Production of superphosphate and sulfuric acid is based on imported phosphate rock and pyrites. These raw materials were imported in the following quantities in the period 1954-56 (metric tons):

International Scene

	Phosphate Rock	Pyrites
1954	275,851	121,892
1955	241,111	131,605
1956	283,565	133,799

Most of the phosphate rock comes from Morocco and the remainder chiefly from the U.S.S.R. and the United States. Imports of pyrites are supplied almost equally by the United Kingdom and Norway.

The entire domestic output of superphosphate is sold to Danish agriculture and meets the greater part of consumption of this type of fertilizer. Some domestically produced superphosphate (76,000 tons in 1956) is mixed with imported potash and sold in the form of a granulated potash-superphosphate mixture (1:2) which has attained increasing popularity. Experiments are being made with a 1:1 mixture to improve stability.

In 1956, the Danish Sulphuric Acid and Superphosphate Factory began a considerable expansion of capacity at its Kalundborg works by improving the pyrite ovens and the sulfuric acid tower system, which, when completed, will increase capacity by 15 to 20 percent. Similar expansion of the company's other two plants at Fredericia and Norresundby is contemplated. The company also completed construction of a granulating plant at its Fredericia branch. All three of its superphosphate factories are now so equipped and to meet increasing demand for granulated fertilizer the company intends to expand them. A new phosphoric acid plant is planned at Fredericia in connection with the company's research activities, which include work on a more concentrated superphosphate. It is expected that this plant, estimated to cost 8 million kroner, will be completed within the next 2 years.

Superphosphate imports totaled 68,312 tons in 1954, 38,807 tons in 1955, and 111,495 tons in 1956, the Netherlands and West Germany being the principal suppliers.

Demand for other types of fertilizer is met entirely by imports. Quantitywise, the most important are nitrogenous materials; imports totaled 544,926 tons in 1954, 457,409 tons in 1955, and 614,545 tons in 1956. Calcium nitrate accounts for approximately 90 percent of imports, with Norway by far the principal source. Natural Chilean nitrate

'INTERNATIONAL SCENE' CHANGED FAST FOR CHARLES MARSHALL

Charles V. Marshall, Canadian agricultural specialist, went to Venezuela last year to help develop chemistry laboratories.

Something he hadn't bargained for was a ringside seat for a revolution. But that's what he got.

In January, when dictator Perez Jimenez was overthrown by a patriotic junta and a lot of blood spilled on both sides, the streets of Caracas, Venezuelan capital, were the battleground.

Mr. Marshall was an interested onlooker. He was on loan to the United Nations and was working in the interior, just 160 miles away.

Returning this summer to his regular job as officer in charge of the chemical and micro-analytical laboratories, Plant Products Division, Canada Department of Agriculture, he commented: "It was an interesting assignment."

His work in Venezuela in an advisory capacity to Petroquimica—a branch of the Department of "Minas and Hidrocarbons"—fell into two parts.

At Moron, on the shore of the Caribbean Sea, Mr. Marshall designed a chemical laboratory to produce mixed fertilizers from imported raw materials.

Petroquimica had established an "Estacion de Evaluationes" for field trials of fertilizers at Mayorica, near the city of San Felipe, in the fertile Yaracuy Valley about 40 miles from the Caribbean.

Here Mr. Marshall aided in establishing a large chemical laboratory for the analysis of soils, fertilizers and plants.

makes up the greater part of the remainder.

Imports of potash (potassium chloride), the other important fertilizer used in Denmark, declined slightly from 286,847 tons in 1954 to 281,965 tons in 1955, but rose sharply to 349,309 tons in 1956. A few years ago East Germany was the principal supplier of potash to the Danish market, but has been considerably outranked by West Germany in recent years. In view of the modification of various provisions governing importation of goods under an unofficial agreement between Danish trade organizations (Agricultural Council, Federation of Danish Industries, Copenhagen Chamber of Commerce, and Provincial Chamber of Commerce) and the East German Chamber of Foreign Trade, it may be assumed that imports of potash from East Germany will again increase.

Imports of other types of fertilizer and fertilizer mixtures are of little importance.

There are almost no exports of fertilizers and overall consumption corresponds closely to domestic production plus imports. Consumption is expected to show a further gain in 1957 over the 1956 record figure, according to the Danish Sulphuric Acid and Superphosphate Factory. Preliminary statistics for the first three quarters of 1957 show a rise in imports of fertilizers as well as phosphate rock and pyrites, but relatively unfavorable farming conditions due to declining export prices for some important commodities, principally bacon and butter, may have adversely influenced final 1957 results.

FRANCE

Organic Fertilizer Gains Outstrip Chemical Mixtures

In the modernization of French farming, demand for chemical fertilizers has seen a sharp rise, but the demand for composted organics has been even more remarkable. In 1938-39, organics accounted for only 32% of the fertilizers used in France, but in 1956-57 they accounted for more than 47% of total consumption. During 1957, French farmers bought 3,257,400 metric tons of organic fertilizers, compared to 2,545,000 metric tons the preceding year, and exports of organics were 46% over the 1956 tonnage.

Total sales of France's fertilizer industry in 1957 were a record-breaking 75 billion francs ($180 million).

French agricultural production is already 40% higher than pre-war, and is expected to rise another 20% by 1961. Tractor manufacturers, too, are reaping benefits from the agricultural prosperity. In 1954 there were 270,000 tractors on French farms; today there are almost 600,000. At the end of 1956 there was one tractor for every 50 acres of arable land; at the end of 1957, one for every 40 acres.

INDIA

Continue Seeking U. S. Aid For Industry's Expansion

An Indian industrialist visited the U.S. last month to seek further financial backing in expansion of India's fertilizer industry. Shanti Prasad Jain, board chairman of the Newspaper Times of India, talked with officials of International Finance Corp. and World Bank for Reconstruction and Development about a $10 million loan for development of paper and fertilizer plants. His tour included a swing through the Midwest, where Mr. Jain urged industrialists to consider placement of new plants in his country.

Meanwhile, a Bombay machinery importer announced its interest in representing American producers of nitrogenous fertilizer machinery in India. Gladwyn & Co. seeks connections with U.S. firms which are willing to license progressive manufacture of parts in that nation after installation of production units. They propose to have future parts fabricated in India under technical guidance of the collaborating American manufacturer, due to reluctance of that nation's government to license import of spare parts and other items which can be fabricated locally.

ISRAEL

Taps New Materials Sources While Output, Exports Soar

The past decade has seen Israel transformed from a nation begging for fertilizer imports to a nation processing its own mineral wealth in modern plants and seeking foreign markets for its fertilizer materials and products.

With no systematic geological survey of the entire region, no less than twenty separate phosphate deposits have been located and tagged for use. The nation's first phosphate mining operation, started at Oron just five years ago, produces an ore of lower P_2O_5 content than the Moroccan mines with which it competes for export trade. An enriching plant has been set up at the site, and now turns out some 250,000 annual tons of material with a 28.5% P_2O_5 content. A calcination plant to bring the quality to an even higher standard is under consideration, and predictions are that production will reach a million tons a year within the next decade.

When Israel lost its large potash extraction plant on the northern shores of the Dead Sea following the Israel-Arab War in 1948, it began expanding a smaller plant at Sdom, on the southern end of the sea, and expects to reach an output of 120,000 tons of potash this year, a figure exceeding combined tonnage of both plants before the war with the Arabs. With a production ceiling of 135,000 annual tons in sight, the Ministry of Development is now studying a plan to build a dam across part of the Dead Sea to form a natural evaporation pan, then pipe the concentrated brine to a Mediterranean or Red Sea port for production of potash materials at a plant located in the port loading zone.

Israel's oil for synthetic ammonia production, added to the phosphate and potash reserves, makes her the only nation between the Dead Sea area and Japan with basic raw materials for all three primary fertilizer elements. In addition, Israel's strategic geographical location — with ports on both the Red Sea and the Mediterranean—gives her immediate waterborne access to three major continents, including the fertilizer-starved nations of lower Asia.

Fertilizers and Chemicals Ltd., Israel's big producer, already has virtually all the production capacity required to meet the country's domestic fertilizer requirements. Its output, in the 1956-57 year, included: 79,254 tons of sulfuric acid, 94,379 tons of superphosphate, 6492 tons of dicalcium phosphate, 10,035 tons of ammonia, 38,892 tons of ammonium sulfate, and 4145 tons of potassium sulfate. The combine has already announced plans this year to double its nitrogen fertilizer capacity and to add facilities for production of liquid fertilizers.

These large and modern facilities, with necessary raw materials close at hand, leave Israel looming larger and larger each year in the Near East fertilizer markets picture.

International Scene

ITALY

Controversy Flares Over ENI Fertilizer Plans

Quite a stir has developed in Italy since Ente Nazionale Idrocarburi (ENI) announced plans for a new synthetic rubber and fertilizer plant at Ravenna (July C.F.) to produce 650,000 annual tons of nitrogen fertilizers, using a feedstock of methane from its Po valley petroleum operations.

As ENI is a government monopoly, Montecatini—Italy's giant in the chemicals field—has raised a howl and sought the aid of the National Association of Chemical Industries in an effort to block ENI's entry into a field already served 'so adequately by private industry' that half the industry's annual output of 250,000 tons is available for export.

ENI reached an agreement in June with Federation of Agrarian Consortia—the Italian cooperative association that distributes the great bulk of agricultural materials in the nation—to handle distribution of fertilizers from the Ravenna plant. With this assured market coupled with a low-cost production, ENI expects to be able to market its fertilizers at a delivered cost amounting to approximately 90% of the going price of commercially-produced plant foods in Italy.

JAPAN

Ammonium Sulfate Tops But Other Production Rising

Fertilizers have been the mainstay of Japan's chemical industry and because of the urgent necessity of increasing food production this branch has made impressive postwar gains. In 1956, fertilizers accounted for 28.7 percent of the chemical industry's total production and output of these materials was 11.8 percent greater than in 1955. Although this sector is no longer expanding so rapidly as several others, it is highly developed and has continued to hold its own against its nearest rival, synthetic resins.

Unlike many other branches of the chemical industry, the fertilizer sector is not greatly affected by limitations on foreign exchange for raw materials. Nevertheless, it has not been producing at full capacity, primarily for two reasons: first, a continuing shortage of electric power; and second, relatively high raw materials costs which affect sales in both the domestic and international markets, especially the latter, where Japanese fertilizers must meet stiff competition from cheaper European and United States products despite a freight advantage in some areas. Rising freight rates also threaten the profit margin on exports as well as domestic sales of phosphate fertilizers such as calcium superphosphate and fused phosphatic rock. Higher freight rates, however, often operate in favor of the Japanese product in competition with American and European fertilizers if the raw materials do not have to be imported.

Further significant increases in output depend largely upon cutting costs to facilitate expansion of overseas markets and increase domestic sales. Fertilizers are important earners of foreign exchange and exports of these products are being emphasized. Increased production, especially of the newer types, has made available larger quantities for export and proximity to Korea and Formosa affords a freight differential which gives Japan a decided advantage.

Ammonium Sulfate.

Ammonium sulfate is the most important fertilizer produced in Japan. It is made and exported in the largest quantities and is a leading source of foreign exchange, not only because of the high volume but the 100-percent gain in exchange because domestic raw materials are used. In 1956, 2,322,602 tons of ammonium sulfate were produced, an increase of 9.1 percent over the 1955 output of 2,128,945 tons. Exports totaled 475,531 tons, almost 15 percent greater than 1955 exports of 413,647 tons, but less than the postwar high of 499,000 tons in 1953.

Several factors adversely affect the ammonium sulfate market. Shortages of coal and in the dry season of electricity tend to limit production; the more versatile urea is offering greater competition and its production is increasing at a phenomenal rate; ammonium sulfate from the West competes strongly in Japan's major overseas markets of Communist China, Formosa, and South Korea, despite the freight advantage.

Japanese producers plan to meet this challenge by modernizing facilities and converting to production of ammonia from natural gas and the waste gases of certain petrochemical processes.

Urea

Under MITI's streamlining program, production of urea has increased rapidly. It was first made commercially in Japan by the Toyo Koatsu Company in 1948. Japan was the second most important world producer in 1956, following the United States. Its output of both industrial and fertilizer urea accounted for about one-fourth of the Free World supply, more than half of United States production.

The rising importance of urea is not expected to be disruptive to the fertilizer industry and may possibly assist it in achieving greater integration. Conversion from ammonium sulfate to urea production can probably be accomplished with minimum expense because ammonia-processing facilities are used in making both fertilizers. It should be noted that leading producers of urea also make ammonium sulfate. Demand for sulfuric acid will be less as it is not used in making urea.

Growers of leafy non-grain crops account for 71 percent of the domestic demand for urea and when the material comes into general use for wet crops consumption will increase even more rapidly. Year-end stocks in 1956 were 27,399 tons, up only 37 percent compared with a production increase of more than 53 percent.

In 1956, eight chemical firms made as a co-product 242,534 tons of urea, an increase of 53.3 percent over 1955 production; one firm made more than half the total. Production of ammonium sulfate increased 9.1 percent and that of calcium cyanamide decreased. Exports of urea totaled 60,316 tons in 1956, a slight decrease from the 1955 figure of 62,715 tons. Almost the entire amount went to Formosa (Nationalist China), Communist China, and South Korea.

Phosphatic Fertilizers

Production continued upward, totaling 2,058,085 tons compared with 1,794,786 tons in 1955. Imports of phosphate rock rose to 1,686,484 tons from 1,646,463 tons in 1955. Increased freight rates on the raw material caused a slight rise in producers' prices for phosphatic fertilizers.

Despite record exports of 525,402 tons of superphosphate (including more than 225,000 tons to Communist China) in 1956, more than 25 percent of the production increase was added to year-end stocks, which rose to 222,112 tons, 77,492 tons higher than at the end of 1955.

Calcium Cyanamide

Production decreased very slight-

ly in 1956 from that in 1955 but exports were down sharply, to 10,108 tons from 33,540 tons in 1955 and 61,035 tons in 1954. The decline is attributed to loss of the major portion of the South Korean market which formerly took almost all of Japan's exports of this material. However, domestic demand exceeded production and compensated for the loss, so that stocks were below the 1955 level.

Other Fertilizers

Ammonium chloride, ammonium nitrate, compound fertilizers, and triple phosphate production was modest although substantially greater than in 1955.

MEXICO

Output At Peak; Imports Up Sharply

A report just completed by Nacional Financiera, a government agency, shows that Mexican production of fertilizers last year hit a new record of 270,993 tons, an increase of 14 per cent over the previous year.

Nearly 100,000 tons of the total was ammonium sulfate, with 85,000 tons of hyperphosphates and 74,000 in formula mixtures and 2,300 in organic fertilizers.

Heaviest increase (25 per cent) was in the formula group, with ammonium phosphate rising 13 per cent and hyperphosphates 10 per cent. The organic fertilizer group showed a drop of three per cent in output.

Nacional Financiera figures also showed tht domestic consumption of fertilizers last year rose to 425,091 tons from 370,650 tons in 1956, an increase of nearly 15 per cent. Imports of fertilizers also rose from 133,069 in 1956 to 154,158 tons in 1957, a rise of almost 16 percent. Value of the imports rose from 158 million pesos (12.6 million) in 1956 to 175 million pesos ($14 million) in 1957.

The growth of domestic demand for fertilizer would justify investments to quadruple the present production, Nacional Financiera stated in its report, to bring the total to approximately one million tons of ammonium sulfate or its equivalents. In the last seven years, the domestic output rose by 400 per cent, and NF predicts that within the near future the country will be producing the 157,000 tons of hydrogen in demand and which cannot now be supplied from domestic sources.

Among projects in the planning stage or already in early stages of execution, NF listed the following:

Expansion of Guanos y Fertilizantes de Mexico at its Cuatitlan plan to attain additional daily production of 150 tons of sulfuric acid.

Two plants at Monclova, Coahuila and Zacapu, Michoacan, which together will provide about 32,000 tons of nitrogen.

The projected plant at Salamanca, Guanajuato, with participation of NF, the Sociedad Mexicana de Creditos Industriales and Guano y Fertilizantes de Mexico, with an estimated investment of 100 million pesos ($8 million) for production of 100 tons of anhydrous ammonia daily.

Two other plants projected by Guanos y Fertilizantes, one at Coatzacoalcos with an investment of 60 million pesos ($4.8 million) for 150 tons daily production of triple hyperphosphate and one at Ciudad Madero, Tamaulipas, at a cost of 20 million pesos ($1.6 millicn) to make 100 tons daily of simple hyperphosphate from petroleum by-products.

NEW ZEALAND

Inaccessible Pastures Spur Air Fertilizer Spreading

When the aviation industry holds its annual convention in New Zealand, airline business isn't even on the agenda. The chief activity of aviation there is spreading fertilizer. Since 1950, this has been the nation's fastest growing industry. New Zealand, of course, is mainly an agricultural country, depending on animal farming, and requires frequent fertilization of pastures.

The switch to aerial spreading has been the most spectacular farming development since World War II. Today, about 45 per cent of all fertilizer is spread this way. Last year, more than 450,000 tons were dropped over a record of 4,159,400 acres.

Out of 686 civil aircraft of all kinds, 279 are engaged in agricultural aviation. The figure was more than 300 not long ago, but dropped with the introduction of larger planes.

A drop in farm prices in the last two years has, if anything, put the brakes on the industry's advance. The country is in the midst of a recession, and farmers have been forced to economize in the use of fertilizer. But at the first sign of recovery in farm prices, there is almost certain to be an even more rapid increase in the aerial technique to compensate for delayed maintenance.

This method of spreading fertilizer is particularly adaptable to New Zealand, because much of the farming country is steep and inacessible. Planes have helped to bring into production large areas of former wasteland.

An important result has been the establishment of new output records in nearly all branches of farming for several straight years. In seven years sheep and cattle production have risen 25 per cent.

It has been estimated that farming aviation has increased the national income by about 56 million pounds ($146,800,000) a year.

The Tiger Moth aircraft originally used have been replaced by larger machines especially built for the purpose. Dakotas, carrying five-ton loads from civil airfields, are used in some areas.

Mose costly equipment has produced a trend toward larger companies with greater capital and resources. Financial problems still exist, but the aerial fertilizer industry is firmly established in New Zealand.

PORTUGAL

Industry's Progress Slow, But Colonial Markets Help

The Portuguese fertilizer industry has made progress, although slowly, and still has many problems to solve. The government has adopted a dual program aimed at achieving self-sufficiency in nitrogen and increasing agricultural productivity by encouraging the use of more and better fertilizers. Abundant supplies of hydro-electric power resulting from above-normal rainfall favored production in 1956 and permitted capacity operation throughout the year. Consumption of fertilizers is expected to increase gradually as farmers become aware of the benefits to be derived from their use. There is also an expanding colonial market.

The Portuguese phosphate industry is old and well-established, but the nitrogen branch is newer and not yet competitive economically. However, consumption of nitrogenous materials is increasing rapidly and the rising market and government protection should enable the industry to expand sufficiently to make production economic. All of the potash consumed is imported, but the amount used is small.

Despite the current planned expansion of the nitrogenous sector, annual output of these materials is expected to fall short of demand

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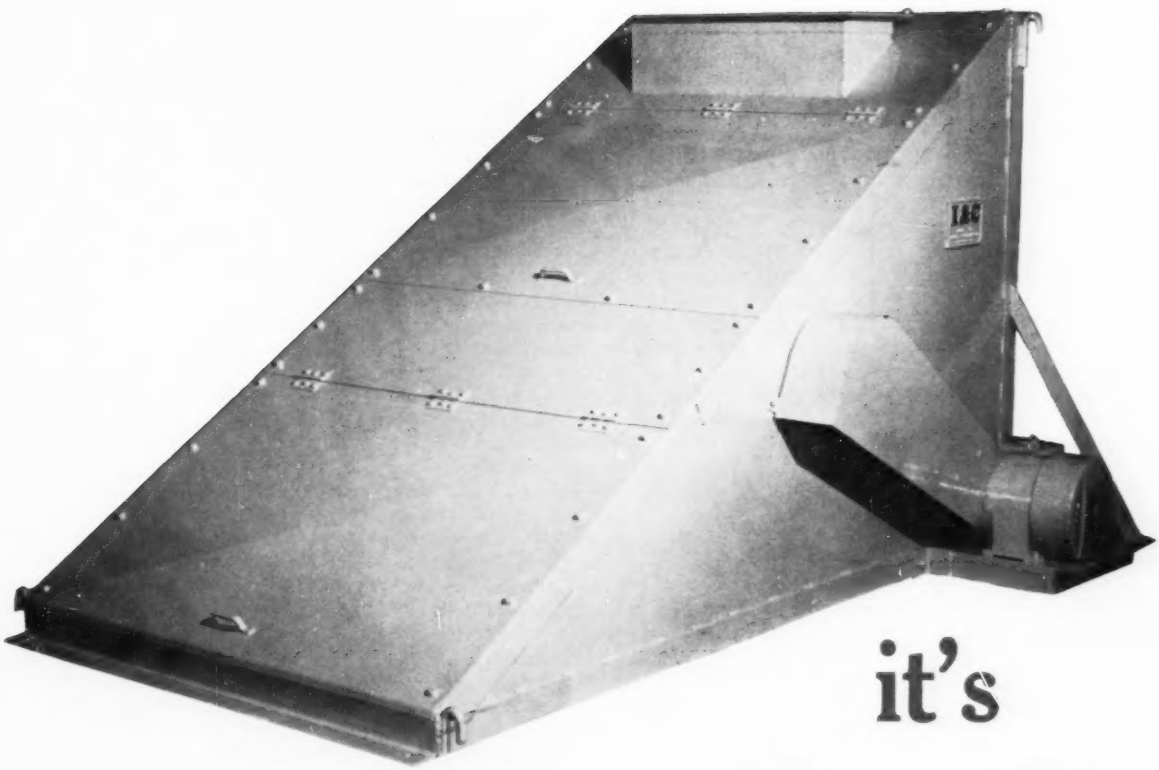

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even after the program is completed. It is estimated that the market for ammonium sulfate and other nitrogenous fertilizers will rise to 400,000 tons by 1960. Sales of imported and domestically produced ammonium sulfate, according to Uniao Fabril, one of the two large manufacturers of nitrogenous fertilizers, was as follows in the 6-year period 1951-56 (metric tons): 1951, 95,913; 1952, 110,990; 1953, 121,953; 1954, 154,751; 1955, 155,528; and 1956, 173,970.

The output of ammonium sulfate rose to 104,706 tons in 1956 from 80,201 tons in 1955 and 58,738 tons in 1954. These figures include production by Amoniaco Portugues, which operates a plant at Estarreja, near Oporto. That company's output of ammonium sulfate increased from 35,197 tons in 1955 to 42,684 tons in 1956, made possible because of the coming into operation of a fifth group of electrolyzers in November 1956, with a sixth group to be added. Additional generating capacity from the new Picote hydroelectric plant is expected to make possible the planned increase in hydrogen production. One of the major steps in expanding output of nitrogenous fertilizers is to make plants independent of the fluctuations in electric power supply by installing facilities for production of hydrogen by chemical rather than electrolytic processes.

Through modernization and expansion of its Alferrarede and Barreiro plants, Uniao Fabril do Azoto increased the output of ammonium sulfate from 45,000 tons in 1955 to 61,311 tons in 1956 (22,220 tons in 1952) and plans to expand further its Barreiro plant as part of a general program to increase capacity. The company's annual report for 1956 points out that failure to receive official authorization to install a 120-ton-per-day ammonia unit may hamper its efforts in the next few years to reach the target figure for nitrogen fertilizers made by the ammonia synthesis process, as the Barreiro ammonium sulfate plant cannot operate at capacity without the additional supply of ammonia.

Uniaio Fabril justifies its plant integration and expansion plans on the basis that prices for nitrogenous fertilizers must be reduced in order to meet those of foreign producers, also pointing out that because of the impending establishment of the European Free Trade Area it is even more esssential that farmers have lower priced fertilizers in order to compete with foreign countries in agriculture.

The company stresses its view that integration in the nitrogenous fertilizer branch, so that the industry is not divided among plants producing the various components, is necessary to achieve this objective. It also points out that the raw materials for producing ammonia come from the country's only petroleum refinery, and that lack of competition has kept prices above those on the world market. The Portuguese Industrial Association, in its 1955 report, agreed that synthesis of ammonia would be necessary if Uniao Fabril's two plants are to produce fertilizers on an economic basis.

Superphosphate

Uniao Fabril and two other companies produce superphosphate. Output declined from 399,000 tons in 1955 to 383,000 tons in 1956. Imports of phosphate rock, principally from Morocco, increased from 110,367 tons in 1955 to 128,000 tons in 1956.

Calcium Cyanamide

Production of calcium cyanamide, which began in 1954, expanded from 4,000 tons in 1955 to double that amount in 1956. Companhia Portuguesa de Fornos Electricos, the sole producer, plans to expand capacity to 10,000 tons.

Other Fertilizers

Uniao Fabril has applied for permission to build a 26,000-ton urea plant. The company hopes to diversify its line by including compound fertilizers.

RUSSIA

New Phosphate Capacity Poses Export Threat

Russian phosphate is becoming a serious threat to the foreign market which absorbs huge quantities of U. S. and North African phosphate each year.

Russian production has now reached an estimated five million tons annually, with about 10% going into export trade, but the export tonnage is rising steadily and has already brought free nations some stiff competition in Scandanavian countries. Russian phosphate shipments have been able to successfully meet the test of uniformity as to quality and dependability of export shipments.

Biggest factors in the phosphate export market are now the North African producers, with eight million tons annually going into the overseas market. U.S. exports exceed three million annual tons, the bulk of it being shipped from Florida's yearly output of approximately 10 million tons.

Spencer Adds Line Of Direct Application Nitrogen Solutions

Spencer Chemical Company has added a line of non-pressure direct application solutions to its nitrogen products. Trademarked 'Ura-Greeen,' the liquid nitrogen fertilizer will be produced at the company's Vicksburg, Mississippi works and Henderson, Kentucky works. At Henderson a 100-ton-per-day plant for both liquid and solid urea is in the final stages of construction.

J. C. Denton, Spencer's Agricultural Chemicals vice-president, says "Our expanding urea production facilities will enable us to effectively market 'Ura-Greeen' solutions in an area where these non-pressure type solutions have proven to be very popular sources for nitrogen." He announced that Joe Tuning, who has been handling anhydrous ammonia sales, has been named to coordinate both solution and anhydrous ammonia sales. He will have offices in Kansas City.

Three men have been assigned to work with Mr. Tuning in setting up the 'Ura-Greeen' sales and distribution program. Ray M. Mitteness, formerly Spencer agronomist in Iowa, and Darrell D. Martin will work in the areas which will be served by production from the Henderson works. Ned Haldeman, Mississippi-Louisiana salesman, will work in the area served by the Vicksburg works. Actual sales work on the new line of solutions will be handled by Spencer's regular Agricultural Chemicals sales force.

Spencer says that it plans to market 'Ura-Greeen' through its regular distributors of "Mr. N." ammonium nitrate and their dealers. A field storage tank program is being inaugurated whereby the company will lease tanks to its fertilizer distributors, who will make them available to their dealers.

Ura-Greeen, compounded of urea and ammonium nitrate in water, will be available in solutions of 32, 30, and 28 per cent nitrogen. Spencer says the three "e" Greeen in the trademark is a carry-over from the recently-developed 'Spensol Greeen' solutions. The extra "e" was adopted to distinguish the corrosion-cutting properties of an inhibitor which is used in all the solutions.

Safety Schools

ATLANTA

The second of five regional accident prevention schools for fertilizer plant personnel gets underway in the Southeast region at the Heart of Atlanta Motel in Atlanta, Ga., on Sept. 4 and continues through Sept. 5.

Sponsoring the two-day school is the Fertilizer Section of the National Safety Council in cooperation with the National Plant Food Institute. Quentin S. Lee, The Cotton Producers Association, Atlanta, is director of the school.

Other regional schools include the opening two-day gathering held at Cornell University, Ithaca, New York, Aug. 14-15, and the Mid-Western session planned at National Safety Council's headquarters in Chicago, Sept. 10-11. The Southwestern school is slated for Austin, Texas, while the Western meeting is scheduled for San Mateo, California. Dates have not, as yet, been set for the two latter schools.

Speakers and their topics for the school in the Southeast include the following:

Thursday, September 4

8:30 a.m. Registration and distribution of materials
9:30 a.m. Opening and welcome, George L. Pelton, vice chairman, Fertilizer Section, National Safety Council
10:00 a.m., "Know Your Accident Problem," Professor William N. Cox, Jr., Georgia Institute of Technology
11:00 a.m. "Getting the Facts—Inspections," Joe Winkler, assistant Southern Division engineer manager, American Mutual Liability Insurance Co.
11:30 a.m. "Getting the Facts—Investigations," W. C. Creel, safety director, N. C. Department of Labor
12:00 noon—Lunch
1:00 p.m., "Getting the Facts—Accident Analysis," John Gallagher, senior industrial engineer, National Safety Council
1:30 p.m.—"Building the Team—Committees," Quentin S. Lee, Cotton Producers Association
2:00 p.m. "Building the Team—Training," P. Andrew Springer, safety engineer, Atlanta Traffic and Safety Council
2:30 p.m., "Building the Team—Incentives," (speaker to be announced)
3:00 p.m. "Building the Team—Outside Assistance," John Gallagher
3:30 p.m. Film, "The Secret of Supervision"
3:45 p.m. Question and answer session
7:00 p.m. Dinner

Friday, September 5

9:00 a.m. Film, "Teaching Safety on the Job"
9:30 a.m. "Solving the Accident Problem—Housekeeping," W. A. Stone, superintendent, Wilson & Toomer Fertilizer Co., Jacksonville, Fla.
10:15 a.m. Recess
10:30 a.m. "Solving the Accident Problem—Health Hazards," Hugh Parker, director of Industrial Hygiene Division, Environmental Health Services, Georgia Department of Health
12:00 noon "Solving the Accident Problem—Electrical Hazards," Carl Watts, safety engineer, Liberty Mutual Insurance Co.
12:45 p.m.—Lunch

CHICAGO

The school in accident prevention for fertilizer plant personnel in the Midwest is slated for September 10 and 11 at the National Safety Council's headquarters in Chicago.

Cooperating in setting up arrangements for the school are John E. Smith, director of Safety, Spencer Chemical Co., Pittsburg, Kansas and Glenn Griffin, director of Industrial Training, National Safety Council. The Midwest regional office of National Plant Food Institute is assisting in the arrangements.

All fertilizer manufacturers doing business in the Middle West are being invited to send supervisory personnel to the school.

The two-day session will cover numerous phases of safe handling of materials and also will deal with safety problems involved in the formulation of fertilizer-insecticide mixtures.

The registration fee will cover instruction materials provided for each registrant, including safety manuals, educational literature, poster and other safety aids.

The program for the Midwestern school includes the following speakers and their topics:

Wednesday, September 10

8:30 a.m.—Registration, introductions and purpose of school, George L. Pelton, vice chairman, Fertilizer Section, Smith Agricultural Chemical Co.
9:00 a.m.—"Fundamentals of Accident Prevention," Dave Arm, manager of Industrial Sections, National Safety Council
10:00 a.m.—"The Foreman's Safety Job For All Line Management and Supervisory People," John E. Smith, director of Safety, Spencer Chemical Co., with film, entitled, "No One Else Can Do It"
10:45 a.m., "Personal Factors in Safety"—Glenn Griffin, National Safety Council
11:30 a.m.—Buffet luncheon
12:30 p.m.—School participation—"Problems We Would Like To Have Solved," John Gallagher, senior industrial engineer, National Safety Council
1:00 p.m.—Group problem assignments
2:30 p.m.—"Discovering Accident Hazards," W. C. Creel, safety director, N. C. Department of Labor, and film, "Pick Your Safety Target"
3:30 p.m.—Summary and discussion of day's work

Thursday, September 11

8:30 to 9:30 a.m. — "Teaching Job Skills — Teaching Safety," Glenn Griffin, and film, entitled, "Teaching Safety On The Job"
9:30 a.m.—"Materials Handling Problems of the Fertilizer Industry," C. Z. Greenley, director, Insurance and Safety, International Minerals & Chemical Corp.
10:30 a.m.—"Maintaining Good Order For Safety," W. C. Creel, and film, "Case of the Cluttered Corner"
11:30 a.m. Buffet luncheon
12:30 p.m.—"Safety Materials and Services of The National Safety Council," R. L. Benson, National Safety Council
1:00 p.m.—"Fertilizer-Insecticide Mixtures," R. C. Fitzgerald, plant manager, Smith-Douglass Co., Streator, Ill.
1:30 p.m.—"Safe Use of Liquid Materials in a Fertilizer Mixing Program," L. L. Lortscher, Spencer Chemical Co., Columbus, Ohio;
2:15 p.m.—Summary and discussion

A LETTER TO THE COMMERCIAL FERTILIZER STAFF

After many years I am resigning as Public Relations Chairman of the Fertilizer Section of the National Safety Council. I have been both proud and happy to be associated with this fine group of men who have contributed so materially to the improved record of accident and fire reduction within the fertilizer industry.

I recall with special pleasure the earlier meetings with A. B. Pettit, John Smith, Tom Clarke, Vernon Gornto, Curtis Cox, Roger Hugg, John Mark, Paul Truitt, Ed Burroughs, Ed Kapusta and many others.

I hope that the fertilizer people fully recognize what these men and others who have followed have done for the fertilizer industry generally. In my opinion, not enough praise can be heaped on these men for the wonderful work which they did in the earlier days.

Needless to say, I am greatly in your debt for the fine coverage you have always given the Section. It has been our intention through the years to keep you up to date regarding activity within the Section, and you have been more than fair in handling the coverage.

My successor, Stratton McCargo of G.L.F. will, I am sure, do an excellent job in this important field. I hope you will extend to him all the help that you have given to me during the past years.

While this does not write finis to my contact with the Section, it does from an official standpoint; so after October 20th I'll say goodby as Chairman of the Public Relations Committee.

Thanks again for your many kindnesses.

(Signed)
J. LAUREN SHOPEN
Chairman, Public Relations
Fertilizer Safety Section

Industry Improves Safety Record in 1957

The fertilizer industry improved its standing safety-wise in 1957, and showed a striking improvement in contrast with some other segments of the chemical process industries group. However, its record is poor in comparison to most divisions of the chemical process group, and poor when contrasted with the process group record as a whole.

The slate showed progress for fertilizer manufacturers on both the accident frequency and accident severity counts. Their frequency rate (number of disabling injuries per million man-hours of exposure) declined from 10.82 in 1956 to 8.27 in 1957, while the severity rate (number of days lost per million man-hours of exposure, including charges for permanent disabilities and death) dropped from 1953 for 1956 to 777 for 1957.

For all chemical process industries, frequency increased from 3.38 to 3.55 during the same period, while severity climbed from 462 to 536.

The 1957 tally still indicated the fertilizer industry as having the third highest frequency rate among the 18 divisions of the chemical process industry group, and fifth highest severity rate.

Industry as a whole showed a slight drop in accident frequency, to 6.27, and an increase of less than one percent in accident severity, to 7.40, according to National Safety Council's 1957 analysis.

Plant Safer Than Home, Safety Survey Shows

Industry has learned that there's no place like home—if you want an accident!

This fact comes out of a survey by National Safety Council of the off-the-job accident experience of 78 companies, representing a cross-section of U. S. industry. The companies—including some from Canada and the U. S. territories—are engaged in a wide range of activities; three of the companies were 'large,' 75 medium to small.

The survey showed these facts: **1.** Working for the three big companies was 12 times as safe in 1957 as being at home or in public places. **2.** Injuries to workers employed by the 75 smaller companies occurred nearly five times more often off the job than on. **3.** Old-fashioned slips and falls nosed out modern traffic as the No. 1 hazard to employes of the 78 companies, injuring 1,982 workers off the job. **4.** Traffic was, however, the chief off-the-job death-dealer, taking more than eight times as many lives as did falls and slips. **5.** The 75 smaller companies reported that each off-the-job injury kept employes away from work an average of 18 days.

Safety Council Offers Three New Booklets

Accident Prevention Handbook

The National Safety Council has released the second edition of its "Handbook of Accident Prevention."

The 93-page handbook is written for small businesses lacking full-time safety specialists. The handbook's style also makes it effective for use by key employees in small organizations.

"With the help of the handbook and the special agencies listed in it, any industrial operation can be made a safe operation, provided that management determines to make it so," the Council says.

Accident Facts

The 1958 edition of "Accident Facts," the National Safety Council's statistical yearbook, is now available.

It contains facts and figures on all types of accidents. Several sections of the annual publication are devoted to occupational accidents, and provide a comprehensive background for an industrial safety program.

The book contains a list of accident rates by major industry groups, as well as charts showing the trend of accidents. Other topics listed include most common source of work injuries, part of the body most often injured, off-the-job accident problems, and how unsafe acts and unsafe conditions contribute to permanent impairment and death.

According to the Council, the 96-page book provides ideas and facts for making speeches, writing articles, preparing reports and planning safety campaigns.

"Don't Be Alarmed"

The National Safety Council has published an accordion-fold pamphlet, "Don't Be Alarmed," giving the latest information and advice about fires, one of industry's deadliest foes. Each year, fire costs industry countless thousands of dollars and takes thousands of lives.

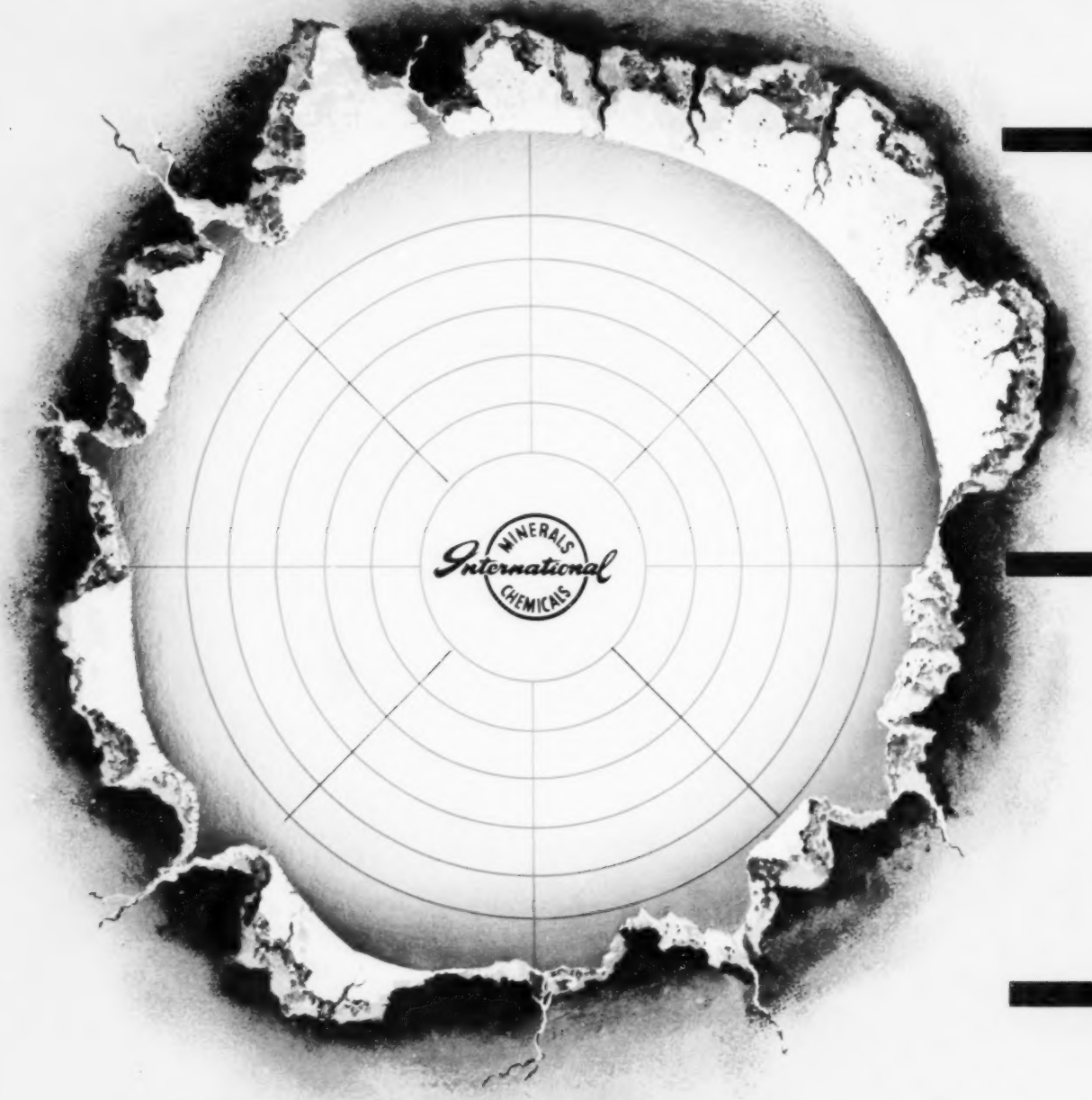
Best protection against fire? A "heads-up" attitude by each employee—a knowledge that fires are caused by carelessness and lack of knowledge. Common and uncommon causes of fire are presented in "Don't Be Alarmed" in an "easy-to-read, hard-to-forget" manner.

Further information on any of the above booklets, and information on quantity prices, may be obtained from the National Safety Council, 425 N. Michigan Ave., Chicago 11, Ill.

ON TARGET
...to help you make the one triple decision

International Minerals

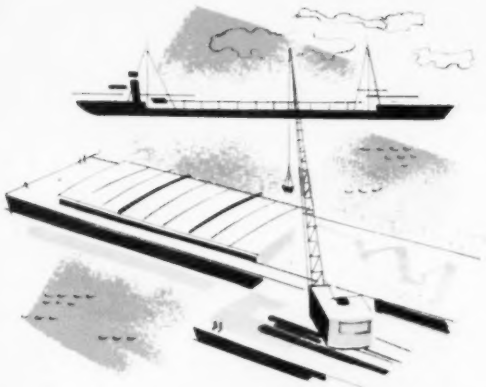
triple super service aimed for on-the-move fertilizer manufacturers



ON TARGET . . . your International Minerals' sales representative with the triple facts of phosphorus . . . International Minerals' triple superphosphate with guaranteed minimum 46% APA, consistently high analysis that aids in formulation—and in the texture you want.

But even more, your IMC man is on target with an entire program of service and built-in benefits that extend from in-plant techniques to in-field promotion. He's on your staff, backed by the full impact of International experience and skill.

For details write or wire International Minerals, Phosphate Chemicals Division, Administrative Center, Skokie, Ill



International establishes new standards of service in transportation . . . pioneered inland water route shipping, rolling warehouse program and super-speed on-site warehousing to meet peak load ordering with cash savings for you.

International's research continually works for you — develops phosphate products with superior quality . . . a never-ending search for pure, high analysis—the texture and mixing characteristics consistent with your needs and profit structure.

International puts years of marketing and promotional experience on your staff . . . helps you in every phase of the selling plan —from analyzing competitive situations to stimulating men, meetings and merchandising.

Experienced technicians bring practical solutions to production and formulation problems . . . every International Minerals man—scientific, technical or service—is on tap to give you on-location assistance at the cost of a call.

3 triples by International

RUN-OF-PILE — International's fine-textured Triple provides uniform particle size, even density and proper moisture level that lets you ammoniate at higher rates and temperatures.

COARSE — International's coarse-textured Triple gives same excellent ammoniation batch after batch . . . promotes desirable agglomeration.

GRANULAR — International's new granular Triple is non-crumbling and free-flowing; makes granulation easier. Sponge-like structure facilitates ammoniation.

Whether your plant operations calls for a fine, coarse or granular texture, International's Triple Superphosphate has it . . . to solve even the toughest formulation problems, and help you make the most of production and product. And backing up this 3-way texture selection is a host of built-in extras that help you "design" a superior finished product. There's guaranteed 46% APA — International's consistent, high analysis that reduces unit-delivered cost. Extra-long chemical reaction time teamed with *natural curing* and supported with physical characteristics that make storing and handling easy. Desirable physical and chemical properties also help you hold down reversion problems, contribute to lower production costs. Your International representative has all of the facts. See him soon.

International

5355

phosphoric acid

cuts corners on cost, keeps high analysis grades consistently on control

International's wet-process phosphoric acid works wonders where formulation costs are out of line . . . keeps high grades on the low side of cost control. Specifications: 53-55% P_2O_5; suspended solids, 2.5% by weight, max.; specific gravity (60° F) 1.70-1.75. And International's dependable fleet of rubber-lined tank cars puts rush shipments plant-side quickly to keep peak season schedules humming. And if you need technical assistance with production or planning installations, International Minerals' experienced and skilled technicians are on tap for on-the-spot trouble shooting.

MINERALS International CHEMICALS

Creators of Living Minerals

Phosphate Chemicals Division

INTERNATIONAL MINERALS & CHEMICAL CORPORATION

Administrative Center: Skokie, Illinois

GEORGE F. DIETZ
General Chairman

GEORGE L. PELTON
Assistant Chmn.

FERTILIZER SECTION
NATIONAL SAFETY COUNCIL

Fertilizer Safety Section Assembles Outstanding Program

for October Meeting in Chicago

Plans are complete for the program at the big Fertilizer Section Safety meeting to be held in Chicago October 20-21. As in the past, Fertilizer Section meetings will be centered at the LaSalle Hotel, and the industry's sessions will be held in the afternoons so that mornings will be free for attending general meetings of the National Safety Congress convention, or for informal small-group discussion of specific problems in fertilizer plant safety.

Fertilizer Section General Chairman George F. Dietz, safety director at Fertilizer Manufacturing Cooperative, Baltimore, will preside at the initial session of the program. Assistant Chairman George L. Pelton, personnel director at Smith Agricultural Chemical Co., Columbus, Ohio, was program chairman for the annual meeting.

Here is the final draft of the program:

MONDAY, OCTOBER 20

2:00 P.M.–Opening Remarks, Chairman George F. Dietz, safety director, Fertilizer Manufacturing Cooperative, Inc.

2:10 P.M.–Election of officers.

2:20 P.M.–A Challenge in Safety Training, W. C. Creel, safety director, North Carolina Department of Labor.

2:50 P.M.–Accident Reporting and Analysis, John E. Smith, safety director, Spencer Chemical Co.

3:15 P.M.–Discussion

3:20 P.M.–The So-Called Accident-Prone Individual, Dr. John E. Foulger, director of medical research, E. I. DuPont de Nemours and Co., Inc.

3:50 P.M.–Discussion

4:00 P.M.–Safe Practices in Handling Ammonia and Nitrogen Solutions, Vernon Page, chief engineer, Sohio Chemical Company.

4:30 P.M.–Discussion and announcements.

TUESDAY, OCTOBER 21

12:00 P.M.–Luncheon; Brainstorming for Safety, A. C. Studt, manager, Training and Education, Hotpoint, Inc.

2:00 P.M.–Announcements

2:10 P.M.–Film Presentation, "*Knowing's Not Enough*," a production of United States Steel Corporation; commentary and remarks, R. L. Pierce, administrator Safety and Workmen's Compensation, United States Steel Corporation.

3:10 P.M.–Discussion

3:15 P.M.–Panel Discussion: Accident Case Histories; moderator, J. Lauren Shopen, safety director, Consumers Cooperative Association.

PANELISTS: Gaither T. Newnam, manager, Insurance Department, Smith-Douglass Company, Inc.; John S. Mark, production manager, Farm Bureau Cooperative Association; Stratton M. McCargo, personnel supervisor, G.L.F. Soil Building Service; Mike C. Ellison, safety supervisor, Mississippi Chemical Corporation; C. S. Griffith, Cincinnati plant superintendent, Virginia-Carolina Chemical Corporation; W. A. Stone, superintendent, Wilson and Toomer Fertilizer Company; W. D. Smith, safety director, Southern States Cooperative; and A. I. Raney, safety director, Phillips Chemical Company.

4:30 P.M.–Announcements

W. C. CREEL
Speaker

C. S. GRIFFITH
Panelist

J. S. MARK
Panelist

S. M. MCCARGO
Panelist

J. L. SHOPEN
Panel Moderator

G. T. NEWNAM
Panelist

A. I. RANEY
Panelist

W. D. SMITH
Panelist

W. A. STONE
Panelist

PEOPLE in the Industry

Davis

Coope

PCA

F. O. Davis, executive vice president and treasurer of Potash Company of America, has been named president of the company to succeed G. F. Coope, who has retired after leading the Company for 21 years.

Mr. Davis has also succeeded Mr. Coope as president of the Potash Company of America, Ltd., the wholly-owned Canadian subsidiary of PCA now completing a development and construction program at Saskatchewan, Canada.

Retiring under the company's established retirement policy, Mr. Coope will remain on the board of directors and the executive committee of the company. He will also serve as a consultant in both places.

W. H. Bartlett, comptroller of the company, has been named treasurer.

James River

The James River Hydrate & Supply Company, Inc., Buchanan, Virginia, has announced the appointment of Carroll B. Manley to the position of Vice-President—Sales. He has had extensive experience in the limestone industry, having joined the company in 1942.

Spencer Chemical

Joe Tuning has been named by Spencer Chemical Company to coordinate the sales of anhydrous ammonia and its new line of "Ura-Greeen" solutions for direct application, which will be produced at its Vicksburg, Mississippi works and its Henderson, Kentucky works.

Tuning

Ray Mitteness, Darrell D. Martin and Ned Haldeman will work with Mr. Tuning in setting up the sales and distribution program, according to J. C. Denton, Spencer vice president for Agricultural Chemicals, who announced the plan.

Hewitt

W. G. Hewitt, president, Pacific Guano Co., this week resigned his position with the company. He has not announced his future plans.

He joined Pacific Chemical and Fertilizer Co. in Honolulu, Hawaii shortly after graduation from Harvard College in 1938 where he received a degree in chemistry. Pacific Guano Co. is allifiated with Pacific Chemical.

Mr. Hewitt was named president of Pacific Guano in 1953. He is president of the California Fertilizer Association and a member of the National Plant Food Institute Board of Directors.

Ashcraft-Wilkinson

Trenton R. Tunnell has been promoted from vice president to the newly created post of executive vice president of Ashcraft-Wilkinson Co. of Atlanta. Also promoted were Robert E. Ashcraft, from vice president to vice president and secretary, and H. W. Tyson, from assistant treasurer to treasurer. W. Mercer Rowe Jr., vice president, was named to the board of directors of the sales agency for fertilizer materials and agricultural chemicals.

Smith-Douglass

Walter F. Bram has been appointed manager of raw material procurement, wholesale and export sales for the Smith-Douglass Company, operations vice president J. A. Monroe has announced.

He succeeds Russell Spivey, who resigned August 1. Mr. Bram has been assistant general traffic manager for Smith-Douglass since 1957, having joined them in 1954.

V-C

Overton D. Dennis, under doctor's orders, has resigned as a director of Virginia-Carolina Chemical. V-C's controller, Edward R. Adams, has been elected a director of the Richmond Control of the Controllers Institute of America.

Monsanto

William R. Haas has been made director of marketing for Monsanto's overseas division. Norman E. Horton succeeds him as director of sales, and Robert L. Vincent, managing director of their Japanese operation succeeds Mr. Horton.

Farm Bureau

Ellis S. Halley has been made manager of the seed and plant food division of Farm Bureau Cooperative Association, Columbus, O.

US Borax

United States Borax & Cnemical Corporation has announced appointment of P. J. O'Brien as vice president, production and engineering, and the appointment of R. F. Steel as vice president, finance and administration. The new positions were created to divide the heavy managerial responsibilities formerly centered in one office.

Mr. Steel, who was recently promoted from secretary and treasurer to assistant general manager, has been with the company for twelve years. Mr. O'Brien, who joined the United States Potash Company at Carlsbad in 1933 and later transferred to the Pacific Coast Borax Company, had served as general manager of the United States Borax & Chemical Corporation since its formation in 1956, when the Pacific Coast Borax Company merged with the United States Potash Company.

Commercial Solvents

Albert P. Guill has been named western field representative for the Market Development Department of Commercial Solvents Corporation according to an announcement by Dr. Frank E. Dolian, manager of the department.

Mr. Guill will be concerned with the development of new markets for the Company's line including industrial, agricultural and automotive chemicals as well as animal nutrition products in Washington, Oregon, Idaho, California, Nevada, Arizona, and Utah. He will make his headquarters at the Company's district office at 5052 East Slauson Avenue, Los Angeles, California.

Mr. Guill joined Commercial Solvents in July 1954, and has held the post of chief chemist of the Terre Haute plant laboratories since that time.

Escambia Chemical

Dr. L. H. Sutherland has been appointed assistant director of research for Escambia Chemical Corporation, Dr. Mayo Smith, director of research has announced.

Dr. Sutherland is located at Escambia's new Research Center at Wilton, Conn. He joined Escambia in 1956 as group leader in the Research Department and was serving as section head prior to this appointment.

IM & C

International Minerals & Chemical Corporation has announced appointment of Luis J. Vergne as sales manager—Latin America, for the company's phosphate minerals division. He will be responsible for IMC's phosphate rock sales in Mexico, Central and South America, and the Caribbean area.

Mr. Vergne joined International in March, 1957, after four years in sales and traffic with Transcontinental Import Export Corporation, a New Orleans firm engaged in foreign trade with Latin America.

Norman M. Johnson has been appointed supervisor of sales services in the marketing division of International.

He will develop sales incentive and compensation programs, allot quotas and territories, and initiate sales control systems. Mr. Johnson will be located in IMC's new Administrative and Research Center in Skokie, Ill.

Hermes O. Grant, has been appointed a project engineer at International's Bonnie chemical plant near Bartow, Florida, where he will assist in the design, selection and testing of equipment for new plant and major repairs construction at the IMC chemical plant, according to J. F. Roe, plant manager.

Mr. Grant has been project engineer for the Glidden Company in Jacksonville, since 1956, and before that was an assistant department engineer for six years with American Cyanamid at Bound Brook, N. J.

NAC

Appointment of Denis Hayley as director of information for the National Agricultural Chemicals Association, was announced by Lea S. Hitchner, executive secretary of the organization.

Mr. Hayley has had over 20 years experience in the agricultural chemical field.

He started as a salesman for Tobacco By-Products and Chemical Corporation which later became a division of Virginia-Carolina Chemical Corporation and, more recently, a unit of Diamond Alkali Company, where he was product manager for a unit.

Highway Equipment

Appointment of C. "Doc" Meader as district representative for Highway Equipment Company was announced by Gale E. Allen, general sales manager. He will cover the states of Arizona, California, Idaho, Montana, Nevada, Oregon, Utah, and Washington. Highway Equipment Company manufactures lime and fertilizer spreaders.

International Fertilizers

Canada's International Fertilizers has announced two appointments: Brigadier J. H. Real Gagnon as board chairman; A. Lambert as president, replacing T. S. L. Pope who has retired as president.

DuPont

Dr. John Beekly has been made administrative assistant to the general management of the DuPont polychemicals department, where he will assist in formulating technical policies. He has been with them 34 years, and is due for retirement late next year.

Florida Research

Norwood A. Lockett of Foremost Fertilizer has been named president of Florida Agricultural Research Institute. Other officers include Luke Angel of Polk County Fertilizer, George Duckworth of Niagara Chemical and P. J. Gum of Ridge Fertilizer.

American Potash

Allen T. Fuller, Jr., has been appointed assistant sales manager for the National Northern Division of American Potash & Chemical Corporation, according to an announcement by George S. Wheaton, AP&CC vice president in charge of defense programs.

Mr. Fuller, formerly manager of administrative services for National Northern, will work with Jack A. Haynes, sales manager for the division.

T. H. Wrigley has been named to replace Mr. Fuller as manager of administrative services.

Henry Gessner, Jr., has become assistant export manager in the company's New York offices.

He will be in charge of company exports to Central and South American countries and will be under the direction of Ernest A. Graupner, AP&CC export manager.

Mr. Gessner was assistant export manager for Amkor Corporation.

Roland E. Tornquist has joined American Potash as assistant to Treasurer Lawrence A. Adams. Mr. Tornquist previously was a consultant in governmental relations.

Russell S. Sunderlin, plant manager of American Potash's Los Angeles plant, was named to succeed George T. Deck at the Texas plants, while Harold Mazza, research manager at the Los Angeles facility, was appointed Los Angeles plant manager.

Swift & Company

Swift & Company, agricultural chemical division, announces the appointment of H. C. Huffman as head of its procurement department, succeeding B. W. Guess, who has accepted another position.

Huffman

In his new position, Mr. Huffman will be responsible for purchase of plant food raw materials. He will also work with H. P. Gould, manager of the Bartow, Florida, Phosphate Center in the sale of phosphate rock and triple superphosphate.

Texaco

Langbourne M. Williams, chairman and president of Freeport Sulphur has been elected a director of the Texas Co.

California Ammonia

Lowell W. Berry, president of Best Fertilizers Co. and chairman of the Board of California Ammonia Co., has announced appointment of Eugene L. Knickrehm as Ammonia department head and Francis W. Johnson as assistant for Ammonia, in connection with Best's contract for construction and operation of the new Calamco ammonia plant at Lathrop.

Mr. Knickrehm was most recently located at Whiting, Indiana with Calumet Nitrogen Products Company and has had other ammonia plant experience with Spencer Chemical, and at Grace Chemical, under Julian Rogers, then superintendent of Grace's ammonia plant and now vice president for Production with Best.

Mr. Johnson has worked with Spencer Chemical and Grace Chemical.

Potash Institute

Dr. S. E. Younts, former research assistant professor of soils at the University of Maryland, has joined the American Potash Institute as agronomist for the Eastern region serving the area from Virginia to Maine, it was announced by Dr. H. B. Mann, president of the Institute, and Dr. E. T. York, eastern manager of Washington, D. C.

Younts

Hill

Erwin H. Klaus has joined the J. B. Hill Co. division of Balfour, Guthrie & Co., Limited, manufacturers of Hilco Feeds at Fresno, California, to build an integrated marketing program.

Klaus

Mr. Klaus, a specialist in agricultural marketing, came from Albuquerque, N. M., where he was general manager of Ravel Bros., Inc. Previously he served for many years as marketing director of Northrup, King & Co., at Minneapolis and at Berkeley, Calif., where he initiated and directed their marketing program.

Mr. Klaus is also associate editor of Western Feed and Seed.

Lummus

Major General William M. Creasy, upon retirement as chief chemical officer of the U. S. Army on September 1, joined The Lummus Company as vice president and will serve as director of The Lummus Engineering Development Center, it was announced by J. F. Thornton, president of the firm of engineers and constructors.

Sturtevant

William T. Doyle, Chairman of the Board of Sturtevant Mill Company of Boston, Massachusetts, delivered a paper on "The Dry Classification of Solids" at the September 21 to 24 meeting of the American Institute of Chemical Engineers in Salt Lake City. The paper was accompanied by slide illustrations.

Booker

Three representatives of R. W. Booker & Associates left recently for the Republic of Korea in connection with consulting services being performed by the St. Louis engineering firm for the International Cooperation Administration and the Korean government.

Dr. John van der Valk and Fremont Lange are to spend two months studying requirements for fertilizer plants. Charles H. Schuh will remain overseas a similar period studying methods for expanding Korea's sulphuric acid production.

The studies are part of a series assigned to R. W. Booker & Associates, also to cover plants for caustic soda, polyvinyl chloride, rice straw pulp, rice bran oil and synthetic textiles.

Cominco Products

K. T. Seaborne, sales manager for the past 2 years, has been appointed manager of Cominco Products, Inc. according to a recent announcement by R. Hendricks, president of the company. Prior to joining his present firm, Mr. Seaborne was with The Consolidated Mining and Smelting Co. of Canada Ltd. for over 30 years during which time, he rose to the position of Western Sales Manager.

Seaborne

In his new post Mr. Seaborne will have charge of all activities of Cominco Products, Inc., a Spokane, Washington company whose main function is the marketing of Elephant Brand fertilizers throughout western United States.

Dr. W. O. Trogdon

Dr. W. O. Trogdon has been named head of the department of agronomy at Texas A & M, succeeding Dr. J. S. Rogers who has resigned. Dr. Trogdon, who has served as an agronomist with Olin-Mathieson Chemical Corp., assumed his new duties at Texas A & M Sept. 1.

Dr. Roger Friend

Roger B. Friend, formerly chief entomologist and vice-director of The Connecticut Agricultural Experiment Station, has retired after 34 years on the Station staff. He was made assistant entomologist in 1927 and in 1939 was appointed chief entomologist. A year later he was made vice-director, a post he filled until December 1951.

Mississippi AES

After service of from 36 to 41 years, five staff members of the Mississippi AES have retired, and were honored at a dinner at which Dr. Clay Lyle, dean and director paid tribute to their loyalty and achievements. They are Fred H. Herzer, Marvin Gieger, J. Fred O'Kelly, Dr. Roland Cowart, Miss Fannie Page and Duff Maxwell.

Dr. D. T. Kinard

Named as head of the department of agricultural engineering of the Florida Agricultural Experiment Station, is Drayton T. Kinard, of Kentucky, who assumed his new duties Aug. 16 according to Dr. J. R. Beckenbach, director of the Experiment Station.

Dr. Kinard succeeds the late Frazier Rogers.

Dr. W. H. Garman

Dr. Williard H. Garman was elected to the board of directors of the American Society of Agronomy at the society's annual meeting at Purdue University. He is Northeast regional director and chief agronomist for the National Plant Food Institute.

This will be Dr. Garman's second term on the ASA Board. He served as a member of the group in 1950 when he was president of the society's Southern branch.

At the Purdue meeting, Dr. Garman concluded a two-year term on the executive committee of the Soil Science Society of America. He also completed chairmanship of division IV — Soil Fertility, Fertilizer and Plant Nutrition, under the ASA's Soil Science Divisions. Dr. Garman served as vice chairman and program chairman of division IV at last year's 50th anniversary meeting, and on the committee which selected Fellows of the ASA this year.

Henry Borsook

For the first time in history a man famous for his work with the Amercian soybean has been singled out as 1958 Food Man of the Year. Dr. Henry Borsook, Professor of Biochemistry at the California Institute of Technology, will be awarded this Certificate of Recognition at the September meeting of the Southern California Institute of Food Technologists.

This citation was given Dr. Borsook for his outstanding efforts over a period of fourteen years in the development and promotion of soybased Multi-Purpose Food (MPF) as Research Director of the non-profit Meals for Millions Foundation.

T. M. Hyman

Theodore M. Hyman, extension radio and television editor, division of agricultural information, North Carolina State College, Raleigh, was awarded the "Agricultural Communications Award" sponsored by the American Association of Agricultural College Editors and the National Plant Food Institute, at a special luncheon ceremony at the University of Wisconsin.

Louis H. Wilson, Secretary and Director of Information for the Institute, presented to Mr. Hyman a scroll signed by the national judges, together with a check for $500 to be used for advanced professional training in agricultural communications.

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ALABAMA

P. H. Neal, president of **Ketona Chemical Corporation,** Ketona, has announced a new expansion program which will include the construction of facilities at Ketona to produce two solid nitrogen products, prilled ammonium nitrate and ammonium nitrate-limestone. Design capacity of the plant is 75 tons per day of finished product.

The Chemical and Industrial Corporation, Cincinnati, Ohio, has been awarded the contract to design, engineer and construct this latest addition, which is expected to be completed early in 1959. The ammonium nitrate and ammonium nitrate-limestone will be produced by a new C&I process which forms spherical particles with superior storage and handling properties.

Ketona Chemical is jointly owned by **Alabama By-Products Corporation,** Birmingham, Alabama, and **Hercules Powder Company,** Wilmington, Delaware. The primary unit of its manufacturing facilities was projected in 1954, and was the first anhydrous ammonia plant in the U. S. based entirely on coke oven gas. The initial expansion of Ketona Chemical, a plant to produce nitric acid and nitrogen solutions, was completed early in 1956.

CALIFORNIA

Valley Nitrogen Producers Inc. have had their proposed nitrogen plant, to be built near Fresno, approved by the Bank for Cooperatives, who mailed a statement of evaluation to some 60 agricultural cooperatives. Valley Nitrogen is, of course, a cooperative.

ILLINOIS

The Piatt County Service Company, Montecello, having completed construction of bins and installation of equipment to handle bulk fertilizer blending at their warehouse in Lodge, held open house August 28.

There were prizes and refreshments. Personnel from Illinois Farm Supply Company in Chicago, as well as the company's local personnel were on hand to discuss the new operation with farmers.

INDIANA

G.B.C. Chemical, newly formed with $50,000 capitalization, will erect a small dry mix plant at Fairmount. President and general manager is **Earl Campbell,** former **Allied Chemical** representative for Ohio. Incorporators are **C. R. Heileman,** secretary-treasurer, and **R. Hinds** and **H. Todd,** all Cincinnatians.

IOWA

Rath Packing Company is installing mixed fertilizer granulating facilities at their Waterloo plant. The granulating unit will include a T.V.A. type ammoniator, dryer, cooler and screening equipment. High analysis granular fertilizers with a particle size range between 6 mesh and 16 mesh will be produced. Completion of the project is set for the end of November. The plant is being engineered and fabricated by **The D. M. Weatherly Company,** Atlanta.

KENTUCKY

Ohio River Chemical, Boyd County, jointly owned by **Industrial Rayon** and **Spencer Chemical** expects to begin operations in 1960 at the $10,000,000 plant to be built on the 240 acre site on the Big Sandy River bank. The plant will produce as a by-product ammonium sulphate for fertilizer use. General manager will be **Jack Straub** formerly production manager at Spencer's Vicksburg works.

MICHIGAN

The Michiana Chemical Company has been formed in Niles, Michigan, and will manufacture and distribute fertilizers to dealers in Southwestern Michigan and Northern Indiana. Officers and directors of the company are **F. J. Thar** of Benton Harbor, and **Alf H. Oines** formerly of Hartford is president and **Robert W. Freske** of Chicago is vice president and general sales manager. Among the directors there is a wide experience of farming, manufacturing, agricultural chemical sales and mangement.

Bruce Construction Company of Niles is building the plant and installing equipment, including ammoniation.

The company expects to be in operation by early September with mixed fertilizers and other fertilizer materials in both bulk and bags. The plant will have a capacity of about 20,000 annual tons of mixed fertilizers which will be sold as Spartan brand plant food.

MINNESOTA

Willmar Fertilizer, Willmar, has been granted a Small Business loan of $40,000.

* * *

Crookston Liquid Fertilizer Inc., Crookston, celebrated a season of operation with an open house July 12. It is operated by **Tom Cochrane.**

MISSOURI

Cooperative Farm Chemicals Assn. will make another $1,000,000 expansion to their nitrogen plant near Lawrence. With a capacity of 28,000 annual tons of urea-nitrate, it is due to be in production a year from now. CFC has previously announced a $15,000,000 expansion in their anhydrous ammonia production.

UTAH

Delhi-Taylor have an OK from the Federal Power Commission to put down a mine-shaft and build a beneficiation plant to process ores and recover potash in the Moab area in Grand County. The operation is expected to run to $25,000,000.

GREAT BRITAIN

The Anglo-French Phosphate Company has received a conditional offer from **Robert Benson Lonsdale and Co.** for the whole of the 187,500 pounds issued one-class share capital. The total sum involved exceeds $1,600,000. Directors recommend acceptance, and are informed that **Unilever Limited** is accepting in respect of its holding of 55.9 per cent of the capital.

GREECE

Uhde Ammonia Casale, a German Italian consortium, composed of the Italian **Ammonia Casale** and the German **Uhde,** has been awarded a contract by the Greek Government

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Big Dave establishes a new standard in mixing Triples!

Davison's new Hi-Flo Run-O-Pile Triple flows better because it contains less dust. It's easier to handle, cuts unloading costs, and increases your production efficiency. It represents a *real advancement* in mixing Triples.

Hi-Flo Run-O-Pile Triple Superphosphate, made only by Davison, has high capacity for absorption of ammonia in processing either granulated or powdered mixed fertilizers because of its porosity, friability and constant 46/47% P_2O_5 content. It has proven satisfactory for granulating in several different types of granulating equipment. Hi-Flo Run-O-Pile has passed all tests it's been put to in batch and continuous ammoniators. It helps you produce low-cost formulas.

You will like to work with non-dusting Hi-Flo Run-O-Pile Triple. Big Dave says, "We can ship now. Let's talk it over."

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NOW...ONE MIDWESTERN SOURCE FOR THREE BASIC FERTILIZER MATERIALS

With the addition of a phosphatic solution plant to its chemical complex at Tuscola, Illinois, U.S.I. can now supply a large area in the Midwest with a variety of fertilizer materials that will meet all your needs for these components:

PHOSPHORUS . . . in the form of Phosphatic Fertilizer Solution (wet process phosphoric acid, 54-55% P_2O_5). This is available from U.S.I.'s new plant which produces 30,000 tons/year of P_2O_5. This chemical frequently enables you to make your regular and special granular grades of fertilizer at lower cost . . . and to make higher analysis grades.

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SULFURIC ACID . . . available in all concentrations including oleum, plus good spent acid of fertilizer quality. Plants, not only in Tuscola, but also in Sunflower, Kansas, and Dubuque, Iowa.

To help you make the most of these various products, U.S.I. Technical Service people are ready to work with you. The U.S.I. Engineer will help you trouble shoot, set up formulations, work with you on experimental runs, consult with you on equipment selection, and can also offer U.S.I.'s laboratory facilities for more intensive investigations.

For products or assistance from U.S.I. Technical Service Department, write Heavy Chemicals Sales.

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for the construction of a nitrogen fertilizer plant designed for an annual output of over 300,000 tons at Ptolemais.

Financing has been secured by a U. S. credit and by the readiness of the two companies to accept payment in local curency for one third of the sum total involved. Finalization of the contract requires approval by the Greek Parliament.

It has been decided to site the fertilizer plant at Ptolemais, site of the Bodossakis lignite mines which will provide the nitrate plant exclusively with locally produced fuel. Capacity of the nitrate plant will be 75,000 unit tons of nitrates annually, equal to 350,000 tons of fertilizers. This quantity will more than cover current Greek requirements.

IRAQ

Amonia Casale, Swiss consultants, have been authorized to promulgate bid documents for the Basra fertilizer plant. This is to have an initial capacity of 250,000 annual tons of sulfate of ammonia, and will later be equipped for production of other fertilizer materials.

ITALY

Rumianca Co., Turin, one of Italy's largest producers of heavy chemicals, industrial chemicals and fertilizers, has teamed up with **United States Rubber Co.,** to make and sell U.S. Rubber chemicals in Italy.

A new company, **Naugatuck-Rumianca, S.P.A.,** will be formed to produce and market chemical products patented by U.S. Rubber's Naugatuck Chemical division.

Headquarters will be in Turin and a manufacturing plant in Borgaro Torinese, a Turin suburb. Products will include agricultural chemicals and chemical specialties.

JORDAN

Sociele Jordanienne des Phosphates has announced its intention to build a fertilizer plant, and has asked **L. H. Manderstam,** London, to draw up plans.

MEXICO

The Mexican government is pushing fertilizer production. **Banco Nacional** and **Cia. Mexicana de Credito Industrial** and local private capital are financing a $6-million fertilizer plant at Salamanca—site of a **Pemex** refinery. The government-operated fertilizer company, **Guanos y Fertalizantes,** will also put up a plant near Pemex's refinery at Minatitlan.

PAKISTAN

Ensa, French concern has agreed to accept deferred payments and is to construct the 250,000 ton fertilizer plant near Multan. Some 60 trainees will be sent to France for chemical and mechanical engineering background. The plant is slated to go into production in 1960.

SOUTH AFRICA

Fisons Proprietary has announced completion of arrangements for financing of the company's new factory at Sasolburg, to produce sulfuric acid, superphosphate and compound fertilizers, beginning in 1959.

Fisons, of England, and **Albatros Superfosfaat,** of Holland, are principal shareholders of the **South African Fisons Company,** which has factories at Durban and near Cape Town.

TRINIDAD

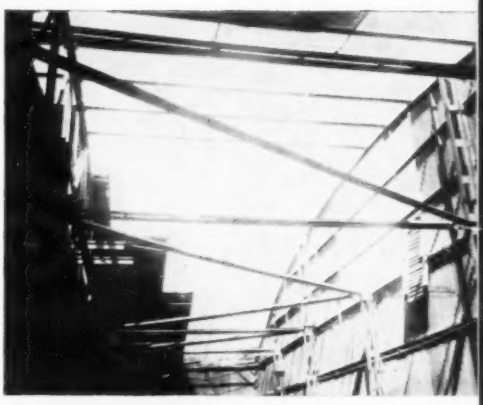
W. R. Grace & Co. has received U.S. government guarantees that it can convert into dollars up to $17,750,000 of its investment in a proposed Trinidad fertilizer plant.

The investment guaranty was the largest signed by the **International Cooperation Administration** since the program was started.

With the guaranty's backing, Grace has been able to arrange for substantial financing of the new plant by U.S. lenders.

Total investment in the new company, to be called **Federation Chemicals Ltd.,** is in excess of $16 million. Grace is the largest equity holder with **Colonial Development Corp.,** a British concern, having invested close to $3 million.

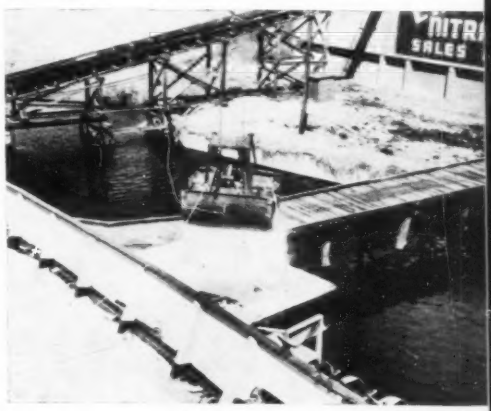
Proposed daily capacity of the new plant is 100 tons of ammonia, 200 tons of sulphuric acid, 75 tons of urea and 245 tons of ammonium sulphate.



About midnight the night of July 10th, a combination twister, hurricane, and 98-mile wind hit Marysville, Kansas, right on the nose. Coming out of the northwest the first resistance the storm met in Marysville was the Blue Valley fertilizer plant. Nearly a fourth of the sheet metal was removed from the roof and ends of the plant in one hour. The Big Blue River ran over at Marysville some 10 feet above flood stage. Within 10 days, however, Blue Valley Fertilizer had its roof back on and most of the building damage repaired. One more week of clean-up and they were ready to ship their "Top-Crop" goods again.

'Amobam' Fungicide Patent For Roberts Chemicals

Roberts Chemicals, Nitro, W. Va., has been awarded Patent 2844623 on 'Amobam,' a new fungicide. Amobam is also used for controlling rust mite on citrus and other insecticide applications; controlling fungus in soils by applying to the soil salts of alkylene bisdithiocarbamic acid; and for mixing with calcium hypochlorite in the spray tank to formulate a compound similar to "Thioneb" fungicide.



Pictured at the right is a set-up used at Chilean Nitrate Sales Company's Norfolk, Va. terminal for unloading their pelletized product from ocean-going cargo vessels. Lightweight single-line type ship's tackle buckets manufactured by Blaw-Knox Company's Equipment Division are employed to discharge all hatches simultaneously, and shore equipment—such as bridges, towers and cranes—is not required. The typical sodium nitrate cargo ship has five hatches, and each is rigged with a one-cubic-yard 2000-pound-capacity lightweight bucket. Buckets are hoisted from the hatch by the amidship boom and winch, and burtoned to the hopper ditching point by an offshore ship's boom and winch. Winch operations are directed by the deck man in charge of the bucket trip line.

By rigging to unload from all five hatches, ships are able to discharge 300 tons of material per hour—60 tons an hour from each hatch—and considerable saving is effected in the cargo carrier's turn-around time. The buckets dump into dockside hoppers which feed the nitrate to a conveyor belt that carries it to bulk storage bins inside the warehouse. The five original Blaw-Knox ST 302 WS buckets purchased in 1938 are still in use and reported to be in good operating order.

NPFI Group Working On Plan To Simplify Solutions Naming

A work group appointed by the National Plant Food Institute in cooperation with nitrogen solutions producers met late in July at NPFI headquarters to study the possibility of devising a simple, flexible system for naming nitrogen solutions.

Development of the nitrogen industry within the past three years has created a large number of ammoniating solutions with at least 22 producers turning out some 53 different solutions. There are over 200 trade names to identify them.

The objective of the meeting in Washington was outlined by Dr. Russell Coleman, executive vice president, who said the group should study the numerous suggestions received from industry, and then develop a system which would simplify the naming of all current and potential nitrogen solutions. He emphasized that it was not intended to limit in any way the number of solutions produced now or in the future.

Members of the group considered several different coding systems at the Tuesday session and recommended a method based on the customary N-P-K nomenclature.

By adopting such an arrangement a producer would prefix the code with his own trademark or brand name; this would be followed by a number representing the total nitrogen content expressed in whole number percentage; next, indicated in brackets, would follow the percentage composition in sequence of nitrogen components—ammonia, ammonium nitrate, and urea. For example, John Doe Brand 492 (34-60-0) would read: total nitrogen, 49.2 percent; ammonia, 34 percent; ammonium nitrate, 60 percent; and urea, 0 percent.

It was suggested at the meeting that the composition preferably should be expressed in whole numbers, similar to the present N-P-K system.

The committee also recommended that if no serious objections were raised to this system, they would request its adoption by the nitrogen producers.

Members of the committee who participated in the one-day meeting were: W. R. Bone, Monsanto Chemical Co.; C. E. Floyd, Virginia-Carolina Chemical Corp.; G. L. Frear, Allied Chemical Corp.; F. G. Keenan, Du Pont; E. D. Kingsbury, Kingsbury & Co.; Joe C. Sharp, Spencer Chemical Co.; H. H. Tucker, Sohio Chemical Co., and Vincent Sauchelli, NPFI.

NPFI and CFA Sponsor Western Range Meet

More than 300 persons will attend the Western Range Fertilization Conference, to be held at Riverview Country Club, Redding, California, on Monday, October 27, 1958, it was announced by the joint sponsors, the National Plant Food Institute and the Soil Improvement Committee, California Fertilizer Association. The program will begin with lunch, and will continue through dinner. Attendance will be from the eleven Western States.

ASA's Mississippi Section Meeting

Farmers, agricultural workers and other members of the Mississippi Section of the American Society of Agronomy attending the annual summer meeting were urged to consider fertilizer as an investment rather than an expense.

L. E. Gholston, associate extension agronomist at Mississippi State University, told the 150 members "the wise use of fertilizer and lime on land is like the oil in an engine. This oil keeps the farm producing smoothly when powered with the gasoline of good management and proper cultivation."

AGENDA FOR NPFI'S CHEMICAL CONTROL PROBLEMS CONFERENCE

The agenda has been announced for National Plant Food Institute's Conference on Chemical Control Problems to be held in the Park Room, Shoreham Hotel at Washington, D. C. on Thursday, October 16.

Tentative programming is as follows:

9:30 a.m. Session

Introductory Remarks, Chairman Vincent Sauchelli, NPFI

Use of Statistical Methods in Analytical Chemistry, John Mandel, U. S. Bureau of Standards

Proposed Reorganization of Magruder Sample Work—Design of Experiment, E. Glocker, Research Laboratory, Davison Chemical Co., Div. of W. R. Grace & Co.

The Importance of an Accurate Determination of Moisture in Fertilizers, C. H. Perrin, Research Chemist, Canada Packers Ltd., Toronto, Canada; W. L. Hill, U. S. Department of Agriculture, Beltsville, Maryland

12:00 Noon—Group Luncheon

1:30 p.m. Session

Report on Collaborative Study of Spectrophotometric Method of Analysis of Triple Superphosphate, W. M. Hoffman, U. S. Department of Agriculture, Beltsville, Md.

Relation of the State Regulatory Office of the Local Fertilizer Industry, Bruce Poundstone, Kentucky State Chemist

Are We Willing to Pay the Piper?, John A. Brabson, director, Chemical Development, TVA Research Branch.

Intermittent or Continuous Shaking in the Procedure for the Determination of Insoluble P_2O_5, H. L. Marshall, Olin Mathieson Chemical Corp., Discussion Leader

Resume of Results of NPFI Chemical Control Project, Vincent Sauchelli, NPFI

Miscellaneous Items: Open Discussion

1. Importance of accurate determination of free acid in superphosphate vis-a-vis ammoniation
2. Desirability of dependable quick method for direct determination of available P_2O_5
3. Use of a coding system in the production of bagging and shipment of fertilizers.
4. Procedure in sampling in AOAC. Sec. 2.1
5. Sampling for production control
6. Solutions analysis particularly for total nitrogen
7. Fertilizer analysis for ammoniacal nitrogen
8. The value of determining urea in mixed fertilizers

Every effort will be made to encourage the audience to participate in constructive discussion of each presentation. This will be an important feature of the conference.

Everyone planning to attend should notify: Vincent Sauchelli, chairman, Chemical Control Committee, National Plant Food Institute, 1700 K Street, N. W., Washington 6, D. C.

another fertilizer project

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Mexico's first Triple Superphosphate plant

Designed to produce 150 metric tons per day of granular fertilizer, the plant sketched above is part of a Mexican government program to promote agriculture and increase industrial independence. It will be the latest of several chemical and fertilizer operations of Guanos y Fertilizantes de Mexico, S. A., and the first Mexican plant producing triple superphosphates. Start-up is scheduled for 1960.

Like so many of the most modern fertilizer plants erected throughout the world, this new venture will employ the Dorrco Granular Fertilizer and Dorrco Strong Phosphoric Acid Processes. Plant design, engineering and equipment for these processes are being supplied by Dorr-Oliver Inc. The contract with Dorr-Oliver also calls for design, engineering and supply of equipment for the unloading and storage of raw materials, shipping, power production, warehouse and laboratory facilities, and for offices and other buildings.

The services of Dorr-Oliver cover all phases of fertilizer plant design, from laboratory studies and economic evaluation to supplying a complete operating facility of any size. Write for a copy of Bulletin No. 8000 – or let us send an engineer to discuss your particular project. No obligation, of course.

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Southwestern Fertilizer Conference and Grade Hearing *Sets New Record*

Fertilizer manufacturers, state control officials and their families from Arkansas, Louisiana, Mississippi, New Mexico, Oklahoma and Texas, plus basic material producers from all points of the nation converged to make the thirty-third Southwestern Fertilizer Conference and Grade Hearing held at the Buccaneer Hotel, Galveston, Texas, July 16-19, the liveliest and most entertaining on record. The attendance exceeded 300, again breaking all previous records.

Golf, deep sea fishing, beach activities and a large social reception highlighted June 16.

Stanley Hackett, president of Dixie Fertilizer Co., Shreveport, was chairman of the business session July 17. Dr. Russell Coleman, executive vice-president of National Plant Food Institute made remarks on NPFI's study on "Farmers Attitudes Toward the Use of Fertilizer" and introduced Dr. Robert L. Beacher, NPFI Southwest regional director who pointed out NPFI accomplishments and reviewed plans including a county promotion program, undertaking of working with bankers, and a demonstrational visitation project. Dr. Beacher mentioned that the county promotion which is scheduled to get under way this fall will be based on soil testing and would be located in one parish in Louisiana, one county in east Texas and two counties in Arkansas. This project is aimed at testing every farm in the particular county or parish within a 12-month period. The demonstration visitation program, he added, is being set up to help attract more farmers and fertilizer salesmen to demonstrations being conducted by colleges in the southwest. Dr. Beacher also explained that NPFI planned to revise its southwestern research projects in order to develop better information on the economic returns from fertilization under different moisture conditions.

At the Thursday morning session, Clayton Rand of Gulfport, Miss. addressed the group with a dynamic talk on world and domestic problems. An editor, author, syndicated columnist and world acclaimed convention speaker, he was recently voted one of the ten top speakers in the United States. Mr. Rand received a standing ovation at the conclusion of his speech.

R. H. Linderman, International Minerals & Chemical Corp., was chairman of the golf tournament Thursday afternoon and the activities for the day were concluded with a reception, banquet and dance in the Moody Foundation Center located adjoining the Buccaneer.

Dr. J. F. Fudge, Texas state chemist, presided over the Southwestern Annual Grade Hearing Friday. Dr. Fudge spoke for Texas; Dr. Lyell Thompson, University of Arkansas, represented Arkansas; and Parks Yeats, director of Feed & Fertilizer Division for Oklahoma, mentioned Oklahoma was going to higher minimum grades; Dr. M. B. Sturgis, head of Agronomy Dept., Louisiana State University, spoke for Louisiana.

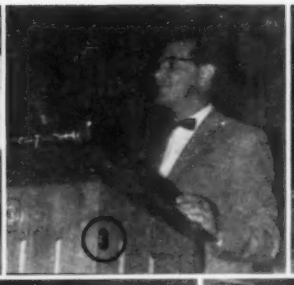
Dr. Sturgis pointed out that 6-12-6 would be the minimum grade in the 1-2-1 ratio for Louisiana in 1959. He stated that while the total fertilizer tonnage was off 14% in 1957-1958 in Louisiana, but plant food units were only off 10%. Dr. Sturgis called attention to their new fertilizer booklet No. 51 printed in January 1958 entitled "General Fertilizer Recommendations for Louisiana." This publication lists the nitrogen, phosphorus and potash recommendations for cotton, corn, oats, rice, sugar cane, peanuts, soybeans, lespedeza and allied pasture crops, all types of fruits and vegetables grown in Louisiana. It is comprehensive and valuable information for the farmer and fertilizer manufacturers. There was a lively discussion of the Southwestern group on the possibility of dropping 5-10-5 and making 6-12-6 the minimum grade.

Dr. Fudge announced the committee for the 1959 convention, with Stanley Hackett to continue as chairman with Mrs. Hackett also on the committee. Other members are Dr. and Mrs. Fudge; Dr. and Mrs. Robert Beacher, NPFI; Mr. and Mrs. Douglas Kelly, Monsanto Chemical Co.; Dr. and Mrs. N. D. Morgan, American Potash Institute; Mr. and Mrs. Floyd Prather, Central Texas Fertilizer Co.; Mr. and Mrs. Jordan Thorne, Grand River Chemical Co.; Mr. and Mrs. H. C. Wells, Armour Fertilizer Co.; Mr. and Mrs. Jack Lindsey, International Minerals & Chemical Corp.; with Jack Lindsey renamed as publicity chairman.

The 1959 meeting will be at the Galvez Hotel, Galveston, Texas July 15, 16, 17 & 18.

◄ Key to Pictures on Facing Page

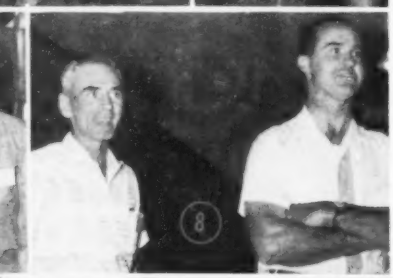
1. Bill Young, American Potash & Chemical Corp.; F. L. Enlow, Delta Fertilizer Co.; Mrs. Young; Joe Mullen, Olin Mathieson Chem. Corp.
2. Pete Stultz, Caprock Fertilizer Co.; Vance Hancock, Dixie Fert. Co.
3. Jack Carlisle, Jacksonville Fert. Co.; Dick Falck, International Minerals & Chemical Corp.; Mrs. Carlisle.
4. Mr. & Mrs. J. Y. Oakes, Louisiana Experiment Station.
5. Harold Trammell, Mrs. E. H. Felte and Mr. Felte, Farmers Fertilizer Co.
6. Sherman Clark, Texas Gulf Sulphur Co.; F. Ward, National Hotel Co.
7. Bill Brashear, National Potash Co.; Bill Young, American Potash & Chem. Corp.; Bill Porterfield, National Potash Co.; Jimmy Powledge, National Hotel Co.
8. G. E. Cartwright, Moneka Farm Stores; J. E. Meggs, Nichols Seed & Fertilizer Co.; Mr. & Mrs. Bill Brashear, National Potash Co.
9. J. G. Woods, Mississippi River Chemical Co.; Bob Mehrhof, Bradley & Baker; Harold Kitchens, U. S. Phosphoric Products.
10. Stanley Hackett, Dixie Fertilizer Co.; Bill Crady, U. S. Potash Co.; Bob Linderman, International Minerals & Chemical Corp.; Dick Goldthwaite, Monsanto Chemical Co.
11. Mr. & Mrs. Dick Falck, International Minerals & Chemical Corp.; Mr. & Mrs. Joe Wright, Texas Farm Products; Loy Everett, Commercial Solvents.
12. L. R. Boynton, U. S. Potash Co.; Mike Wells, Armour Fert. Wks.; Lee Lyons, Bemis Bro. Bag Co.; Bill Burns, International Minerals & Chemical Corp.
13. Fielding Reed, American Potash Inst.; Al Woods, Southwest Potash Co.; Doug Kelly, Monsanto Chem. Co.; R. Warren and Ed Hubbard, Spencer Chemical Co.
14. Dr. & Mrs. Duke Thornton, Tex Ark Limestone Association.
15. Roy Stone and John Beatty, both with Olin Mathieson Chemical Corp., Pasadena, Texas.
16. Niven Morgan, American Potash Institute; John Hall, Potash Co. of America; Lloyd Dhonau, Arkansas Plant Food Co.
17. A. W. Kinnard and Jim Norwood, both with Allied Chemical; Cedric Gran, Olin Mathieson Chemical Corp.; Joe Braighead, Swift & Co.; Ned Halderman, Spencer Chemical Co.
18. Joe and Tom Wright, Texas Farm Products Co.
19. Parks Yeats, Oklahoma State Dept. of Agriculture; G. A. Wakefield, W. O. Trogdon and George Kelt, all with Olin Mathieson Chemical Corp.
20. G. A. Wakefield, Olin Mathieson Chemical Corp.; H. E. Brooks, International Minerals & Chemical Corp.; E. L. Freeman and Z. H. Calhoun, both with Southern Cotton Oil.
21. Dr. & Mrs. Sturgis, Louisiana State University.



1. Stanley Hackett, Dixie Fertilizer Co., presides at business session.
2. Jack Lindsey, International Minerals & Chemical Corp., introduces speaker Clayton Rand.
3. Dr. R. L. Beacher, National Plant Food Institute presents new program to group.
4. Dr. Russell Coleman, National Plant Food Institute.
5. LeRoy Donald, Monsanto Chemical Co.; Bill Scanlon, Phillips Chemical Co.; Dr. R. L. Beacher and Dr. Russell Coleman, both with National Plant Food Institute.
6. Archie Edwards, Red Star Fertilizer Co.; D. M. Waller, Commercial Solvents Corp.; Dr. R. L. Beacher, National Plant Food Institute; Dale Campbell, Red Star Fertilizer Co.
7. J. G. Woods, Mississippi River Chemical Co.; Dick Goldthwaite, Monsanto Chemical Co.; Stanley Hackett, Dixie Fertilizer Co.; Archie Edwards, Red Star Fertilizer Co.; Bob Linderman, International Minerals & Chemical Corp.; H. E. Graham, Ft. Smith Cotton Oil Co. Pre-golf shoveoff.

. . . . more pictures from Southwestern Conference . . . .

1. Fritz Koechlein, Internstional Minerals & Chemical Corp.; Jimmy Dawson, Houston; Archie Edwards, Red Star Fertilizer Co.
2. Harry Igo, Plainview, Tex.; Ray White, Spencer Chemical Co.
3. Dean Smith, Hi-Yield Fertilizer Co.; Jason Gordon, Rowland & Gordon Farm Chemical.
4. W. S. Tyler, Longhorn Construction Co., closes another deal.
5. Mr. & Mrs. Bob Fisackerly, Mississippi Chemical Corp., Yazoo City.
6. L. G. Black, Ark-Mo Plant Foods; Sam Nevins, Olin Mathieson Chemical Corp., Little Rock.
7. J. B. Snell, Minden Cotton Oil Co.; Dr. J. F. Fudge, Texas A & M.
8. C. L. Dew and Bill Dunklin, Planters Fertilizer & Soybean Co.
9. Dave Seay, Phillips Petroleum Co., Houston; Harold Hamby, Chilean Nitrate Sales Corp.
10. Austin Cooke, Swift & Company; S. B. McCoy, International Minerals & Chemical Corp.
11. B. L. Henderson, Houston; Charles Tyler, Longhorn Construction Co.
12. G. E. Magee, Lone Star Bag Co.; Ned Halderman, Spencer Chemical Co.; W. G. Fullick, Lone Star Bag Co.; Archie Edwards, Red Star Fertilizer Co.; Jim Norwood, Allied Chemical Corp.



Editors, Bankers Tour Western Fertilizer Plants

A tour of selected fertilizer industry operations in the Intermountain and Pacific Coast areas begins September 7 at Sacramento, Calif. and comes to a close September 12 in Pocatello, Idaho.

Guests participating in the tour sponsored by National Plant Food Institute include farm magazine editors, land-grant college editors and bankers association executives. Louis H. Wilson, secretary and director of information, Dr. Richard B. Bahme, Western regional director, and Todd Tremblay, Pacific Northwest regional director, will accompany the group on the western circuit.

Fertilizer installations for the educational tour were selected on the basis of providing guests with an opportunity to obtain a representative view of the industry within the area. Not more than one plant of each type will be visited.

The tour includes plants of: Barber and Rowland, Woodland, Calif.; Shell's nitrogen plant at Shellpoint, Calif.; California Spray-Chemical Corp.; Richmond, Calif.; American Potash & Chemical Corp., Trona, Calif.; Western Phosphates, Garfield, Utah; J. R. Simplot Co. mines and Westvaco Mineral Products' electric furnace operation, Pocatello, Idaho.

Bennett Drive for 4-H Gets Good Industry Response

Thirty-five companies had contributed to the work of the National 4-H Club Foundation as of mid-August, in response to an invitation from R. E. Bennett, President of Farm Fertilizers, Inc. and of the National Plant Food Institute, who is serving as fertilizer industry chairman for the fund raising program, begun in June and ended in August.

Companies that have contributed as of August 15 include:

F. S. Royster Guano Company, Norfolk, Va.; American Agricultural Chemical Company, New York, N. Y.; Alliance Fertilizer Corp., Ellerson, Va.; Tennessee Corporation, New York, N. Y.; Davison Chemical Co., Div. W. R. Grace & Co., Baltimore, Md.; Florida Favorite Fertilizer, Inc., Lakeland, Fla.; Howe, Inc., Minneapolis, Minn.; Minden Cotton Oil & Ice Co., Ltd., Minden, La.; National Potash Company, New York; N. Y.; U. S. Industrial Chemicals Co., New York, N. Y.; Duval Sulphur & Potash Co., Houston, Texas; Potash Company of America, Carlsbad, N. M.; Virginia-Carolina Chemical Corp., Richmond, Va.; Escambia Chemical Corp., New York, N. Y.; Federal Chemical Co., Louisville, Ky.; Foremost Fertilizer Co., Leesburg, Fla.; Independent Manufacturing Co., Philadelphia, Pa.; Valliant Fertilizer Co., Laurel, Delaware; Wood Chemical Co., Lubbock, Texas.

Commercial Solvents Corp., New York, N. Y.; St. Paul Ammonia Products, Inc., St. Paul, Minn.; United States Potash Company, Div. U. S. Borax & Chemical Corp., New York, N. Y.; The Southern Cotton Oil Co., New Orleans, La.; Western Phosphates, Inc., Garfield, Utah; Pinellas Growers Association, Clearwater, Fla.; Central Farmers Fertilizer Co., Chicago, Ill.; Shur-Gain Inc., Presque Isle, Maine; R. E. Bennett, Omaha, Neb.; Farm Fertilizers, Inc., Omaha, Neb.; National Plant Food Institute, Washington, D. C.; Miller Chemical & Fertilizer Corp., Baltimore, Md.; T. F. Taylor Fertilizer Works, Inc., Moultrie, Ga.; Epting Distributing Co., Leesville, S. Carolina; Snyder Chemical Co., Inc., Topeka, Kans.; Mason Gin & Fertilizer Co., Madison, Ga.; Arizona Fertilizers, Phoenix, Arizona.

INDUSTRY ROUND TABLE ANNOUNCES COMPLETED AGENDA FOR 1958 MEETING

The Fertilizer Industry Round Table executive committee has announced the following agenda for the group's 1958 meeting. N.P.F.I.'s Vincent Sauchelli is chairman, and other committee members are J. E. Reynolds of Davison Chemical, H. L. Marshall of Olin Mathieson, and Al Spillman of Fertilizer Manufacturing Coop.

FERTILIZER INDUSTRY ROUND TABLE

November 5, 6, 7

Mayflower Hotel, Washington, D. C.

AGENDA

Wednesday, Nov. 5 — Sessions:

10:00 a.m. to 11:30; 2:00 p.m. to 4:30

Theme: Economics of Preventive Maintenance—10 Questions

Brief review of Round Table meetings, Vincent Sauchelli

Engineering Principles Governing Maintenance Discussion Leader (to be announced)

Discussion of pertinent questions and problems by selected members

LUNCH

Discussion of problems associated with main theme by selected members

Thursday, Nov. 6 — Sessions:

9:30 a.m. to 11:30; 2:00 p.m. to 4:30

Theme: Economics of Processing—14 Questions

General Principles of the Economics of Processing Discussion Leader, G. E. Sachsel

Superintendent's Responsibility in Plant Operation Time Table

Discussion by selected members of questions and problems pertinent to the theme.

LUNCH

Union Bag-Camp Study on Bagging and Bags, W. F. Jacobi

Discussion of theme problems by selected personnel

Friday, Nov. 7 — Sessions:

9:30 a.m. to 12:00 Noon; 2:00 p.m. to 3:00

Theme: Economics of Formulation—13 Questions

Principles Governing Economics of Formulation—Discussion Leader, Frank T. Nielsson

Discussion of questions by appointed members

A short business meeting will be inserted in the program at some appropriate time. About 40 questions, sent in by members, all practical and pertinent to operational problems, will be discussed by members, whose experience and knowledge assures worthwhile, useful information. This year's Round Table provides more time for discussions from the floor and for visiting between sessions.

Registration will start Tuesday, Nov. 4, between 7:00 p.m. and 9:00 p.m. in the Mayflower Hotel lobby.

Solutions Convention Set For Cincinnati, November 16-18

The 1958 Convention of the National Fertilizer Solutions Association will be held November 16-18, 1958 at the Netherland Hilton Hotel in Cincinnati, Ohio, President Richard Cecil has announced.

'Planning for Profits' is the theme of this year's convention, which promises to draw an even larger attendance than the 350 registered last year. The opening session on Monday, November 17, will feature a nationally known speaker in the field of sales, covering the dealer's role in fertilizer sales for increased profits, as well as sales planning for seasonal work.

The morning program for November 18 offers a big attraction in presentation of research work being done in the area of the acceptance of new ideas by farmers. Announcement of the speakers on this program will be made soon.

A panel discussion is planned for the Tuesday afternoon session, following the 'Planning for Profits' theme with qualified speakers from the membership covering the subjects of 'Production and Inventory Control,' Production Equipment,' 'Application Equipment,' and 'Standardizaton.'

The Association's Board of Directors will meet on Sunday, preceding the convention. There will be no formal sessions for the members, but many are expected to arrive early to have ample time for visits with suppliers in the Conference Rooms, an arrangement is being repeated this year by popular request.

Two complete floors of conference rooms have been reserved at the Netherland Hilton Hotel, and special plans are being made to assure a full and continuing flow of traffic through these areas. The opportunity to discuss new products, problems of production and distribution, better methods, short cuts to increased profits, and contemplated improvements is planned as a highlight of the meeting.

Conference Room space will be reserved rapidly, and all requests will be filled in order of receipt at the Executive Office in Chicago. Inquiries should be addressed to the executive secretary, M. F. Collie. National Fertilizer Solutions Association, 2217 Tribune Tower, Chicago 11, Ill.

The 1958 Convention Planning Committee is comprised of Chairman William B. Parrish, Auburn, Ill.; E. E. Crouse, N. F. S. A. executive vice president, Libertyville, Ind.; Carl Schumacher, Monsanto Chemical Co., St. Louis; John L. Wilson, Semo Liquid Fertilizers, Charleston, Mo.; and Ernest M. Harper, Allied Chemical Corp., New York.

Since the 1957 Convention, the membership of the Association has increased steadily, and a goal of 200 members before the 1958 Convention has been set for the continuing promotion activities. A total registration of more than 400 persons is expected at the 1958 Convention.

ARI SPONSORS PANEL ON INDUSTRY PROBLEMS

On October 13, the Agricultural Research Institute (ARI) is sponsoring a panel at its National Academy of Sciences headquarters in Washington, D. C. which should interest all members of the fertilizer industry. The Panel is to discuss problems related to agriculture as experienced by the fertilizer producing industry. Moderator for the panel is Vincent Sauchelli, chemical technologist at the National Plant Food Institute. The panelists are three capable representatives of the industry:

Dr. M. B. Gillis, director of research, International Minerals and Chemical Corporation, will discuss 'Technical Problems in the Fertilizer Industry.'

Dr. E. D. Crittenden, consultant, Allied Chemical Corporation, will discuss 'Problems in the Industry Related to Research and Recommendations by the Agricultural Experiment Stations.'

Edwin Cox, chemical engineer, formerly with Virginia-Carolina Chemical Corporation, will discuss 'Business Problems in the Fertilizer Industry.'

What ARI is

The ARI is an organization affiliated with the Agricultural Board, a unit of the National Research Council. It is made up of 2 categories: (1) corporations and individuals engaged in all the various phases of agricultural services: in production, processing and marketing of agricultural products; in manufacture of materials and equipment used in the production, processing and transportation of farm products. (2) State and federal research organizations, academic institutions, scientific societies and other groups related to the science of agriculture. At present a considerable number of firms engaged in the production of fertilizer materials and mixed fertilizers are members. However, the representation is considered to be inadequate, considering its magnitude and importance in the national economy. This may be due largely to the fact that the ARI has not sufficiently publicized its activities. More should be known about its contributions and potential services to the welfare of agriculture and the fertilizer industry.

National Research Council was organized by the National Academy of Science in 1916 at the request of President Woodrow Wilson as a measure of national preparedness. The Academy was created in 1863 by an act of Congress during Lincoln's administration. It was designed to be a non-profit unit, free and independent of pressures from political or vested interests and hence available to government agencies as a source of unbiased, objective advice on scientific matters. Through its boards and committees it can call on the entire scientific potential of the United States without cost except for traveling expenses. The Council is made up of eight main Divisions among which those of interest to fertilizer people are the Division of Biology and Agriculture and the Division of Chemistry and Chemical Technology. These Divisions carry on their work through permanent Boards and Institutes and for special projects through committees, sub-committees and panels. One of those of interest to our industry is The Agricultural Board, established in 1944, to advance and interpret scientific knowledge pertaining to agriculture and initiate and provide recommendations relative to agriculture based on objective analysis and to publicize technical and other pertinent information.

Current active committees are studying problems in agricultural equipment, agricultural pests, ani-

mal breeding, animal health, range and pasture management, soil and water conservation, soil-crop-water relationships, plant composition and fertilizer needs, and economics of fertilizer use.

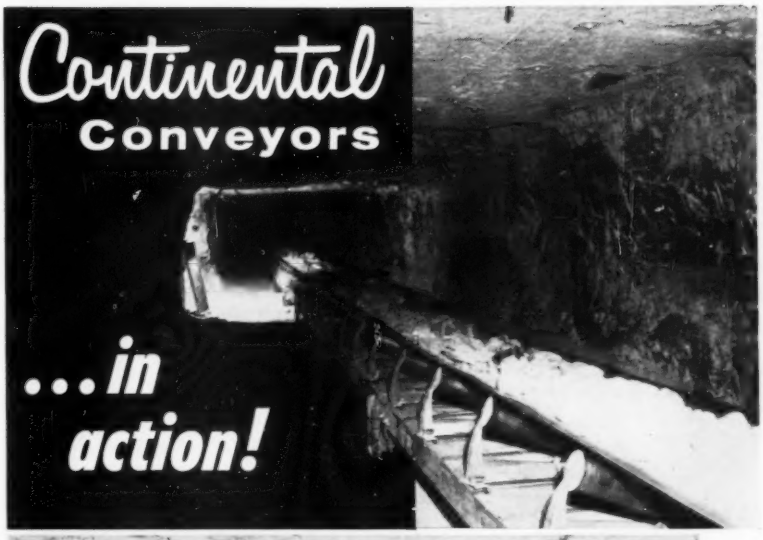
Neither the Council nor the Agricultural Board is a government agency. Committees are not limited to personnel of the U. S. Department of Agriculture and land-grant colleges, but it is free to call on all these and other scientists from all sources including industry. It does not have its own facilities and personnel for conducting research, but stimulates research by pointing out the problems and possible methods of approach.

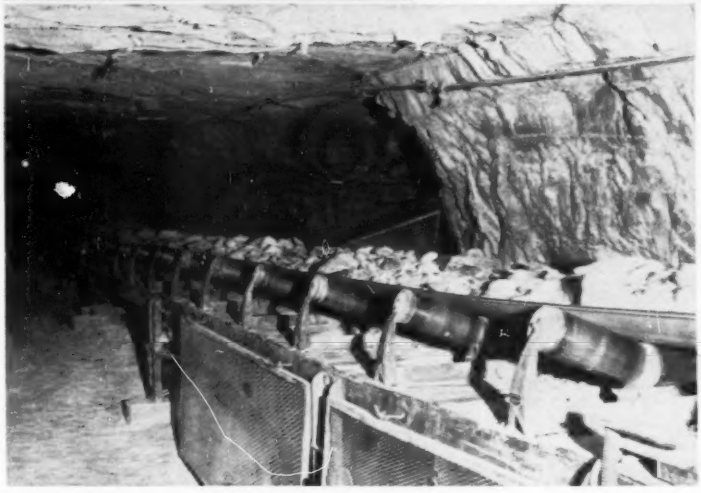
The Agricultural Research Institute was established in 1951 and is the conception of industrial scientists who believed it would be a supporting organization for the Agricultural Board in the promotion of research and policies necessary to the best manner of utilizing the nation's agricultural resources. ARI serves as a medium for organizing the talents of scientists in industry, public agencies, scientific societies and private institutions to aid The Board in its work, and to provde a meeting place where the discussions of common problems could proceed without restrictions.

New NPFI Forest Expert To Coordinate Research

Dr. Laurence C. Walker has accepted a temporary appointment as chief forester for National Plant Food Institute, according to an announcement from Dr. Samuel L. Tisdale, Southeastern regional NPFI director. Through special arrangement, Dr. Walker will be on leave from his post as associate professor of forestry at the University of Georgia for this special assignment.

Dr. Walker's primary responsibility will be to summarize and evaluate forest fertilization work currently under way in the Southeast, and to explore the need for a coordinated program of research activities in this important field. He will be assisted by a six-man college-industry task force to be appointed in the near future. They will devise a plan of research under which efforts of land-grant colleges, pulp and paper interests, and fertilizer groups can be more effectively organized to avoid duplication of effort, and to better appraise the feasibility of fertilizing trees for pulp and lumber purposes.





— at INTERMOUNTAIN CHEMICAL COMPANY

Green River, Wyoming

FOUR YEARS of continuous heavy hauling, without breakdown or repair — or even greasing! That's the record compiled by this Continental conveyor system operating in the mines of the Intermountain Chemical Company, at Green River, Wyoming.

The one mile system consists of three units using 36" x 5" Continental U. S. T. Idlers on steel frame, operating at the speed of 300 feet per minute and delivering 350 tons per hour, three shifts per day, five days per week.

If your tough hauling jobs demand economical and dependable operation with low maintenance cost, let Continental engineers work it out for you.

• *Call, wire, or write your nearest Continental office.*

CGC

INDUSTRIAL DIVISION

Continental Gin Company

BIRMINGHAM, ALABAMA

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NPFI Midwest Committee Okays Expanded Plans and Budget

Members of the Midwest Regional Advisory Committee of the National Plant Food Institute reviewed plans for expanded educational activities and approved the proposed budget for the year ending June 30, 1959.

NPFI President R. E. Bennett, who is also chairman of the Regional Committee, presided.

Among projects approved by the committee were:

County-wide projects to measure the impact of soil testing and fertilizer demonstrations on the use of fertilizer, and the attitudes of people toward the use of fertilizer. These studies will also include a survey of dealers and their attitudes toward fertilizer. The studies will be made in as many states as the available funds will cover.

Grants-in-aid for fertilizer research projects in Indiana, Kentucky and Michigan; also support for fertilizer demonstrations in Wisconsin.

Funds for an NPFI scholarship program in seven Midwestern states, to recognize superior students in soils or crops at the agricultural colleges.

Continuance of the educational news service to 1,700 daily and weekly newspapers and 375 radio and TV stations in the region.

Printing and production of Crop Potential Wall Charts and Check Lists for four more states to supplement the program already under way in Illinois and Wisconsin.

Cooperative projects with state banking associations in 13 Midwestern states.

Expansion of the February joint meeting of college agronomists and fertilizer industry men. A proposed addition is a discussion between extension agronomists and 4-H Club project leaders in the 13 states, with the purpose of strengthening the soils and fertility aspects of the 4-H Club projects in the area.

Zenas H. Beers, Midwest regional director, reported that two new district representatives have been employed. These are Arlan Woltemath, who will work in the states of Kansas, Missouri, Nebraska and Iowa; and John Guttay, who will cover Michigan, Ohio, Indiana and Kentucky.

The Institute is now in the process of obtaining a third representative who will work out of St. Paul, covering Minnesota, Wisconsin, North and South Dakota, Beers said.

"This will bring the staff up to projected strength and we will then proceed full steam with the activities of the region," he added.

Attending the meeting were: W. R. Allstetter, NPFI vice president; R. E. Bennett; Z. H. Beers; Merle Blue, Consumers Cooperative Association; R. G. Fitzgerald, Smith-Douglass Co.; Frank Nelson, Rath Packing Co.; A. C. Norris, V. W. Norris & Son; E. T. Potterton, International Minerals and Chemical Corp.; and W. W. Venable, Cornland Manufacturing Corp. July 25, 1958.

TRIPLE THREAT CHEMICAL!
SPRAYS • DUSTS • FERTILIZER
TRIANGLE BRAND COPPER SULFATE
Successful growers prefer fertilizer and fungicide formulations containing Triangle Brand Copper Sulfate. They know that in fertilizers it is necessary for enrichment of the soil; in fungicidal sprays, where Bordeaux Mixture is the most reliable, or in copper dusts, Triangle Brand Copper Sulfate has definitely proved its superiority over organic materials.
Use of Triangle Brand Copper Sulfate in sprays, dusts and fertilizers results in larger and healthier crops, meaning MORE PROFIT for the grower and MORE PROFIT for the mixer or formulator who serves him.
Triangle Brand Copper Sulfate, which will increase your profits, comes in these convenient forms:
INSTANT (powder) for quick and efficient mixing of Bordeaux sprays.
DIAMOND (snow) small or large crystals, containing 25.2% metallic copper.
BASIC Copper Sulfate in powder form, containing 53% metallic copper.
Contact us today for further information on Triangle Brand Copper Sulfate and its use in agricultural formulations.
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Process Engineering Moves Into New Quarters

Process Engineering and Machine Co., of Elizabeth, New Jersey will open new shops and offices in early September.

The new plant is built specifically for the fabrication of process equipment.

changes

Hubbard-Hall

The Hubbard-Hall Chemical Company, Waterbury, Connecticut, announces the purchase of the majority interest in the firm of Chem-Salts, Inc., of Atlanta, Georgia, formerly Metalsalts Chemicals, Inc., manufacturers of metallic chlorides and copper cyanide. Abner A. Towers, President of Metalsalts, will remain as president of the newly named firm, with Edward R. Jones, also executive vice president of Hubbard-Hall, as vice president. Charles T. Kellogg, treasurer of Connecticut Chlorine Products, a wholly owned subsidiary of Hubbard-Hall, will be secretary and treasurer of Chem-Salts.

The Hubbard-Hall Chemical Company operates several plants in Waterbury, Connecticut, and fertilizer plants at North Haven, Portland, and East Windsor, Connecticut, and South Deerfield, Massachusetts. It operates a number of warehouses for the distribution of its products throughout the Northeast, the principal one being on Route 128 at Needham, Massachusetts.

Chem-Salts Inc., will continue to operate from its office and plant in Atlanta, Georgia.

Dixon International

Dixon Chemical & Research and Dixon Chemical Industries, which recently acquired the I. P. Thomas fertilizer division at Paulsboro, N. J., from Pennsalt, is expanding to foreign markets by creating a new division, Dixon International, to develop and extend the company's overseas sales and imports.

Val J. Millers has been appointed vice president and general manager of the new division, which has its offices at 1260 Broad Street, Bloomfield, N. J.

Hooker Chemical

Hooker Chemical Corporation has announced the new designation "Phosphorus Division" for the four plants formerly operated by Shea Chemical Corporation, merged into Hooker last May. These plants are located at Adams, Mass.; Columbia, Tenn.; Jeffersonville, Ind.; and Dallas, Tex.

Production, sales, traffic, and engineering heads of the new division were confirmed last month by Thomas E. Moffitt, Hooker president, at the company's administrative headquarters in Niagara Falls, N. Y. Oscar D. Crosby was named general production manager, Phosphorus Division. John B. Sutliffe was appointed general sales manager of the division; Percy T. Brewbaker, division traffic manager; and Edward J. Bissaillon, division engineer.

Confirmed as works managers are Harold H. Fletcher Jr. at Adams, H. William Kopp Jr. at Dallas, Joseph T. Hanson at Jeffersonville, and Theodore T. Garrett at Columbia.

—of This and That . . . . .

Thomas C. Law, whose firm of fertilizer chemists, Law & Company, with headquarters in Atlanta, Ga., was founded along about the turn of the century, has for many years devoted much of his time to the good work of the Shriners. Just recently he attended the national meeting in Chicago where he installed the new imperial potentate. Mr. Law is the only past imperial potentate in the South.

Reading the mail is always a highlight in our day, and such letters as this one from Allen J. Weaver of Jacksonville, Fla., livened a recent day: "Dear Sirs – Some years ago I subscribed to many technical magazines and tried to read them all. But in 1957 I retired and then found that most of these magazines were not only unnecessary but not even desirable, and as the renew dates arrived I cancelled. I do not now want anything more technical than ESQUIRE, and I am even too old to enjoy that . . . I am therefore asking you at this time to send the rest of my subscription to _____ with a letter of explanation, including why he should keep it up."

Frank E. Boyd, Southern Agronomist for Virginia-Carolina Chemical Corp. and three time president of Alabama Soil Fertility Society, was featured on the cover and in a four-page article of the May-June issue of V-C NEWS, company employee magazine. Forty years in agricultural work, with duties that keep him hopping from the Carolinas to Texas, have earned Frank the well-deserved 'titles' of "Preacher," "Fertilizer Missionary" and "Doctor of the Soils."

At the height of the 1958 fertilizer season some very fine publicity was given some of the industry's manufacturers. We had an opportunity to read a write-up on . . . . . Best Fertilizers Co., of Oakland, Calif., which now has affiliations with some 17 corporations operating in Arizona, California, Maryland and Texas. In December 1932, with the entire country gripped in our worst depression, Lowell Berry, president and founder of Best Fertilizers Co., started the first home-built fertilizer plant in Oakland. (from "Tideway," Stockton, Calif.)

. . . . . and Cartledge Fertilizer Company (Div. of Wilson & Toomer) of Cottondale, Fla. Raymond Cartledge has been from the beginning, and in fact still is, the power behind the growth of this company. In March, 1934 he conceived the idea of his fertilizer plant and actually began operations with a cement mixer making a 200 pound bag of fertilizer by day, selling it by night, and delivering it the next day. It is a large plant today with a capacity of 50,000 tons, and continues under the management of Mr. Cartledge as Division Manager for Wilson-Toomer. (from "The Bay Liner," Dothan, Ala.)

Paul Rochelle of Morristown, N. J., was a bit surprised last month when a post card was returned for a penny additional postage.

He'd mailed it 31 years ago—when postage was a penny—to a seed company for a free 25-pound trial bag of fertilizer.

St. Regis Shows Off Kansas City Plant Sept. 10

St. Regis Paper Co. is holding a tour at its multiwall bag plant in Kansas City, Mo., September 10 to show its new Pasted Bag Department to guests from fertilizer and other industries. When opened in June, 1956 the plant was equipped only to manufacture sewn multiwall bags, but now pasted open mouth and valve bags as well as the new stepped-end bags will be made there. Tour's highlight will be inspection of a newly-installed machine designed and built by St. Regis for making stepped-end bags.

MARKETS

ORGANICS: The market on organic ammoniates for fertilizer use continues in tight position, with demand somewhat in excess of supply. All producers of leather nitrogeneous tankage are fully committed for the new season, and prices are nominally $3.00 to $4.00 per unit of ammonia through August, and 25¢ per unit higher for September/December, and another 25¢ increase January/forward.

SEWAGE SLUDGE: A large Midwestern producer continues fully committed for the new season at $2.60 per unit of ammonia, and 50¢ per unit of APA August through September, with a 50¢ per unit of ammonia rise October through December. January through May price is $3.25 per unit of ammonia, and June 1959, $3.10.

CASTOR POMACE: Castor pomace is quoted at $36.00 per ton in bags, f.o.b. Middle Atlantic shipping point. Some imported material has recently been offered at $35.00 delivered certain Atlantic coast ports.

DRIED BLOOD: Chicago market on sacked unground blood is around $8.00 per unit of ammonia, and the New York market around $6.75.

POTASH: No unusual activity in this market, with demand in seasonal volume, and prices steady at previously announced levels.

GROUND COTTON BUR ASH: Supplies of this 38 to 40% K_2O Potash, primarily in the form of carbonate of potash, are heavily sold, with a major producer fully committed through the balance of 1958. Uncommitted tonnage still is available for January through June shipment.

SUPERPHOSPHATE: Production continues fairly steady, but in seasonal proportion. Prices are firm and generally unchanged from those of last season.

AMMONIUM NITRATE LIMESTONE: Prices are still at previous season's levels, and movement is entirely in seasonal volume.

SULPHATE OF AMMONIA: Expected production for the new season is heavily contracted at prices ranging from $32.00 bulk for coke oven type to $35.00 per ton for granular synthetic type, f.o.b. origin points. Port prices on Atlantic coast vary from $36.00 to $39.00.

GENERAL: Activity among fertilizer manufacturers is at seasonal low ebb, but in certain parts of the southeast, particularly Florida, increased mixing activity will develop in the next 30 to 60 days. Markets are generally steady on raw materials with a possible shortage developing in natural organic ammoniates.

Industry Calendar

DATE	ORGANIZATION	PLACE	CITY
Oct. 13	Ag. Research Inst. Fert. Panel	Sciences Acad. Building	Washington, D. C.
Oct. 16	NPFI Chem. Control Conf.	Shoreham Hotel	Washington, D. C.
Oct. 16-17	Fertilizer Control Officials	Shoreham Hotel	Washington, D. C.
Oct. 20-21	Fertilizer Safety Section	LaSalle Hotel	Chicago, Ill.
Oct. 22-24	Pacific N. W. Fertilizer Assn.	Gearhart Hotel	Gearhart, Ore.
Oct. 29	S. E. Industry Advisory Comm.	Biltmore Hotel	Atlanta, Ga.
Oct. 30	S. E. Fertilizer Conference	Biltmore Hotel	Atlanta, Ga.
Nov. 5-7	Fertilizer Ind. Round Table	Mayflower Hotel	Washington, D. C.
Nov. 9-11	California Fertilizer Assn.	Ambassador Hotel	Los Angeles, Calif.
Nov. 16-18	National Fertilizer Solutions	Netherland Hilton	Cincinnati, Ohio
Dec. 3-5	Agricultural Ammonia Institute	Morrison Hotel	Chicago, Ill.

Attorney General Upholds Arkansas Deficiency Penalty

The Arkansas Attorney General's office has ruled that it is within the state's police power to penalize commercial fertilizer companies whose products fail to contain within 10 per cent of the nutrients they claim.

Paul Millar, chief inspector of the State Plant Board, said the ruling came on a 1957 act of the General Assembly, following which the board decided to make fertilizer manufacturers pay three times the value involved in any case where primary nutrients were found deficient.

CF-Staff Tabulated TONNAGE REPORTS

FERTILIZER TONNAGE REPORT (in equivalent short tons) Compiled by Cooperating State Control Officials and Tabulated by COMMERCIAL FERTILIZER Staff

	July		June		April-June Qtr.		January-June		July-December		YEAR (July-June)	
STATE	1958	1957	1958	1957	1958	1957	1958	1957	1957	1956	1957-58	1956-57
Alabama	-------	17,153[1]	64,827	62,719	490,441	517,785	734,062	808,901	172,721	174,713	906,783	983,614
Arkansas	20,612	20,457	30,048	26,835	150,970	144,336	226,889	265,235	62,752	59,915	289,641	325,150
Georgia	68,610	60,490	233,786	136,249	798,310	759,449	944,618	980,824	269,529	253,559	1,214,417	1,234,383
Kentucky	-------	7,081[1]	40,544	22,863	290,423	270,257	429,964	444,107	88,771	90,284	518,735	534,391
Louisiana	11,368	11,459	28,181	25,940	127,284	117,568	232,743	200,277	64,192	71,129	296,935	271,406
Missouri	-------	26,013[1]	48,925	50,368	333,851	240,798	420,615	460,487	335,312	331,343	755,927	791,830
N. Carolina	-------	12,999[1]	114,084	66,203	823,676	765,579	1,261,685	1,300,353	199,446	216,234	1,461,131	1,516,587
Oklahoma	5,689	4,351	6,055	5,860	35,804	24,968	55,964	52,836	51,436	54,509	107,400	107,345
S. Carolina	18,064	11,248	53,663	29,475	328,955	301,382	615,733	694,571	116,874	122,929	732,607	817,500
Tennessee	14,400	18,506	44,938	110,689	223,068	334,808	307,182	383,457	135,717	141,181	442,899	524,638
Texas	32,186	44,039	98,263	54,128	288,802	187,223	452,327	392,770	213,801	202,406	666,128	595,176
California	(reports compiled quarterly)				426,032	399,214	679,577	663,484	443,658	416,264	1,123,235	1,079,748
Virginia	(reports compiled quarterly)				331,222	323,034	549,773	600,158	140,783	154,075	690,556	754,233
Indiana	(reports compiled semi-annually)						795,506	781,268	284,959	305,917	1,080,465	1,087,185
TOTAL	170,929	170,550	763,314	591,329	4,648,838	4,386,401	7,706,638	8,028,728	2,579,951	2,594,458	10,286,589	10,623,186

-------(not yet reported) * Not compiled [1] Omitted from column total to allow comparison with same period of current year.

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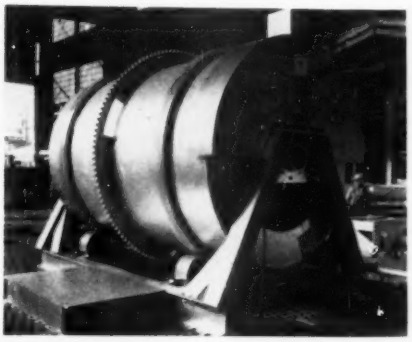

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BOOKS

New NPFI Book Features Application

A new brochure, which is in effect a compact textbook on fertilizer placement and application, has been published by National Plant Food Institute. The 20 page document is entitled "Methods of Applying Fertilizer."

Following an excellent presentation of the principles of fertilizer use, the brochure continues with recommendations for application on field and vegetable crops, fruits and nuts, trees. Application of liquid fertilizer and direct foliar application are both handled, plus a discussion of application equipment.

The work is a complete revision, up-dating the recommendations first published by the National Joint Committee on Fertilizer Application in 1938 and revised in 1948.

'Hidden Hunger' Booklet From Potash Institute

A new handbook on Hidden Hunger in Crops has been issued by American Potash Institute to help the farmer fight hidden hunger in his crops, one of the major obstacles in his path toward highest net profits.

The 48-page booklet, free in reasonable quantities, explains how various research tools can be used to guide farmers through the hidden hunger zone toward the most profitable yield levels.

Presented in the interest of better farming methods and results, the illustrated booklet features articles from a recent issue of the Institute's magazine, Better Crops with Plant Food. The major articles, developed in semi-technical style, were written by the following authorities in modern fertilization practices:

A. L. Lang and Samuel R. Aldrich, University of Illinois soil scientists; Albert Ulrich, University of California plant physiologist; W. D. Bishop, University of Tennessee Extension Agronomy head; R. E. Blaser, C. Y. Ward, and W. W. Moschler, Virginia Agricultural Experiment Station agronomists; Gordon B. Nance, agricultural economist; John Falloon, soils specialist of the University of Missouri, and T. J. Jackson, Oregon State College soil scientist.

The booklet explains what hidden hunger is and what diagnostic tools should be used to conquer it. It explains how field experiments point ways to top yields, how plant analysis can prevent crop hunger, how soil tests can be used to isolate and build up low--producing areas.

It discusses how hidden hunger in grasses and legumes can often be detected by fertilizer responses in the area between actual hunger signs and highest possible yield. And it covers the economic factors that help determine yield goals and the most profitable fertilizer treatments.

Copies may be obtained from American Potash Institute News Service, 1102 16th St., N. W., Washington 6, D. C.

Arkansas Commission Offers Industrial Encyclopedia

Arkansas Industrial Development Commission has produced something unusual in a four-volume presentation offering an easy-to-use, comprehensive study of the state for the business executive, especially those concerned with plant location. Sales also find much usable information.

The encyclopedia contains an industrial Directory and an Economic Atlas with brief but comprehensive data, as well as a Photographic Essay and Industrial History (the latter not yet completed, but due out this Fall).

Copies are presented without charge to industrial executives who request them, sold to others at $25 a set. Separate sections can be bought individually: Directory, $5.00; Atlas, $15.00; Essay, $1.75; and History (when completed) $2.25. Requests, orders and checks should go to Arkansas Industrial Development Foundation, State Capitol, Little Rock.

New Book Lists Farm Flyers

A new directory of 2,377 agricultural and industrial aviation operators has just been published by the National Aviation Trades Association, Robert E. Monroe, assistant executive director of NATA, has announced.

The new directory supplies the names, addresses and work activities in which engaged by those operators who responded to CAA's 1957 Annual Survey of Aerial Work and reported some activity. The last such directory was published by CAA in 1954.

The Directory of Agricultural and Industrial Aviation Operators is available from National Aviation Trades Association, 1346 Connecticut Ave., N.W., Washington 6, D. C. for $7.50.

NAC Changes Meeting Place

The National Agricultural Chemicals Association has changed the location for their 25th Anniversary Meeting to the General Oglethorpe Hotel in Savannah, Georgia, it was announced by Lea S. Hitchner, executive secretary of the organization. The dates remain as originally scheduled, October 29, 30, and 31.

Ground Broken For USDA Lab in Minnesota

Ground-breaking ceremonies for the new North Central Soil and Water Research Laboratory at Morris, Minn. were held July 27. The laboratory, set up by U.S.D.A.'s Agricultural Research Service, is located near the University of Minnesota's West Central School and Experiment station. Research will be conducted on conservation and use of soil moisture and development and improvement of systems for erosion and runoff control.

OBITUARIES

William N. Brinson, 51, superintendent of Kingsbury's Indianapolis plant, died August 2 of a heart attack.

F. C. Chenault, former manager of the Memphis bag plant and sales division, Bemis Bro. Bag Company, died July 23. He retired January 30, 1957 after having been affiliated with the company for over forty years.

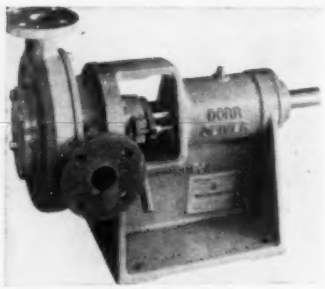
Malachi Cecil Mansfield, 79, retired former agent for Charles W. Priddy, died July 22 at his home in Blackwater, Va.

John Powell, former president of The Smith Agricultural Chemical Co., passed away Aug. 8 in Columbus, Ohio.

Mr. Powell was a former member of the board of directors of the National Fertilizer Association.

A. J. Schuler, 53 of Welcome Agricultural Chemical Co., died after a heart attack August 2 at Welcome, Minn.

Equipment News Roundup . . . .



New Oliver 'L' Pumps

Dorr - Oliver Incorporated announces availability of three new centrifugal alloy pumps for filtrate and transfer applications in the chemical process industries. Incorporating the basic design features of the Oliver type "L" Pump, all three new units have a high degree of parts interchangeability as well as extended application potential, permitting plant standardization on a single basic pump type.

Further information is available by circling Number 1 on Information Service card, page 67.

Turbine Flowmeter Literature

'Turbine Flowmeter,' a propellor-type meter that translates liquid velocity into a millivolt signal proportional to flow rate, is described in a new 4-page Specification Sheet 10C1505. For free copy, circle Number 2 on Information Service card, page 67.

Roller Chain Book

A comprehensive book on Precision Steel Roller Chains and Sprockets, Book 2657, is available from Link-Belt Company and contains 154 pages of detailed engineering data illustrating roller chain's versatility in a wide range of applications.

Written to serve as a practical textbook on the use of roller chain for both power transmission and conveyor service, the book contains typical installation conditions, formulas, charts and diagrams to simplify selection of proper chains for any application.

"Keydexed" for easy reference, the big book describes the selection, application, installation, lubrication and maintenance of roller chains and sprockets for drives and conveyors. Also described are chain casings, lubrication and maintenance, sprocket engineering, leaf chains, roller chain flexible couplings and accompanying technical data. The book also serves as a guide to application of corrosion-resistant stainless steel and bronze roller chains. A table lists the degree of resistance of these metals to almost 400 corrosive agents.

A copy of Book 2657, "Link-Belt Precision Steel Roller Chains and Sprockets," can be obtained without charge by circling No. 3 on Information Service card, page 67.

Small Pelletizing Unit

A brochure describing their small pelletizing unit is being offered by Chemical Engineering Service Division of Manitowoc Shipbuilding, Inc.

Illustrated with scale drawings, the booklet points out unusual features of C. E.'s pelletizing equipment and cluster hoppers. Accompanying literature describes unusual arrangement of flights in their dryers and coolers.

A free copy may be obtained by circling No. 4 on Information Service card, page 67.

Tank Truck Washer

A new device being sold at all Fruehauf Trailer Company branches is claimed to eliminate almost two-thirds of the time required to wash a tank-trailer. 'Wagon-Washer' washes cleaner, faster, and with 42% less water than hand washing requires. Additional information free: circle No. 5 on Information Service card, page 67.

Bench-Type Furnaces

Thermo Electric Manufacturing Co. announces four new electric bench-type high-temperature furnace models. Type 1900 'Temco' Furnaces, varying in power requirements and maximum operating temperatures, find use in laboratory testing and experimentation and in plant batch-testing on production runs.

Units are cased in a substantial welded and reinforced steel shell. Fully 4½" of high-quality firebrick and back-up insulation encases the heating chamber and provides optimum insulating values for efficient use of power. Case is finished in a mottled gray enamel that resists heat and corrosion.

Patented door swings out and up, keeping the hot side away from the operator. A safety switch automatically cuts off the load current when the door opens.

Eight elements, held in refractory supports, are made of large-diameter wire; their alloy composition is highly resistant to many corrosive media.

For new 'Temco-Thermolyne' catalog, circle No. 6 on Information Service card, page 67.

Weighing-Filling Machine

A new, inexpensive, bench model weighing and filling machine for free-flowing materials that operates by gravity flow, needs no motor, and delivers 18 to 20 accurate weighings per minute, has been announced by Richardson Scale Co.

Designated Holm model GF, the new unit is designed for small-scale packaging operations involving free-flowing materials where accurate weighings into small containers are required. Capacity of the standard machine is up to 5 pounds.

This new unit is a bench or table model and consists of an angle iron frame, small top hopper with adjustable discharge gate, revolving three-compartment weigh hopper, weigh beam carried on floating knife edge bearings at 1 to 3, or 1 to 4 ratio, discharge spout and steel base.

Top hopper capacity is 20 to 50 lb. depending on the material bulk and approximate dimensions are 36-in. high x 16-in. wide x 20-in. long. No motor or electrical wiring is needed.

For more information on the New Holm CF Weighing and Filling Machine, circle No. 7 on Information Service card, page 67.

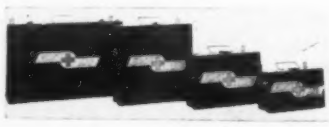
Heavy-Duty First Aid Kits

General Scientific Equipment Company has announced a new line of heavy-duty unit first aid kits designed to facilitate emergency treatment through the use of unit-wrapped items, boldly labeled and arranged for immediate recognition and access.

Each G-S Unit-Type Kit has a facsimile index on the inside of the case lid which shows at a glance the exact location of all items and gives concise instructions for their use. The index also serves as a positive inventory control, since any missing items can be quickly identified from the facsimile table.

Cases are made of 20-gauge steel, finished in either olive green or grey baked-on enamel. Lids are hinged along the entire length of one side and are fitted with a rubber gasket to keep out dust and dampness. Integral mounting brackets and carrying handle permit the kits to be used for permanent wall installation or portable service.

G-S Unit-Type Kits are available in sizes of 10, 16, 24, and 36 units, with standard assortments of first aid items or with "custom" assortments to meet special requirements. Complete information may be obtained by circling No. 8 on Information Service card, page 67.



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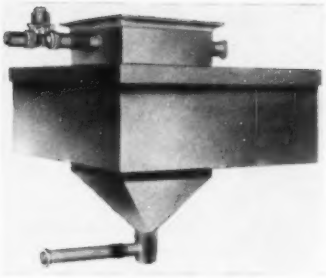


Constant-Feed Scale

A totally new "Low-A-Trol" constant-feed batching scale has been announced by Thayer Scale Corp. Utilization of an electronic closed circuit control in the loss-of-weight system is radical, claiming phenomenal dynamic accuracies without a dead spot. Final accuracies of 0.1% are claimed for wet or dry materials being fed at rates of from 5 lbs. to 5 tons per hour.

The control system has no mechanical parts subject to wear. Knife-edge pivots are replaced by Thayer Flexure Plates guaranteed to retain their accuracy for the life of the scale.

The closed loop system is stated to maintain constant speed control over a long period of time as the accuracy is not dependent on wearing parts. A weight register constantly indicates the weight of material in the hopper. Feeders are available to handle even viscous or lumpy materials. By substituting a controlled orifice valve for the dry feeder, liquids can be weighed.

For more information on batching problems, circle No. 9 on Information Service card, page 67.

Chemical Analyzer

An electronic analyzer for chemical materials, carrying out within a few minutes analysis of products to a degree of accuracy that could previously only be obtained in a matter of hours, has been announced by W. G. Pye & Co., Cambridge, England.

The detector not only records the chemical composition of complex mixtures but also indicates the quality of each component of the mixture, and requires only a very small sample of the material to be tested.

Additional information: circle No. 10 on Information Service card, page 67.

Equipment, Services Brochure

Davidson-Kennedy is offering a new brochure describing the engineering, equipment and construction service offered by Davidson-Kennedy Company and its affiliate, Davidson-Kennedy Associates Company.

A section devoted to fertilizer processing machinery lists the products and services the two companies offer to fertilizer manufacturers. Another section is devoted to key members of their staff of experienced specialists.

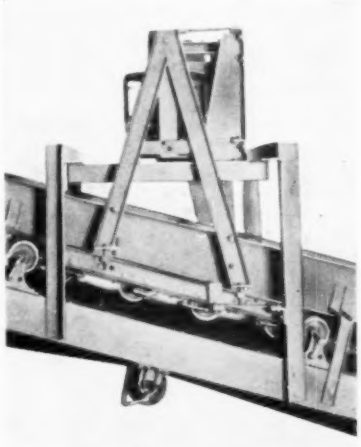
A free copy of "This is Davidson-Kennedy" may be obtained by circling No. 11 on Information Service card, page 67.

Insert Plastic Dall Flow Tube

A recently-devloped lightweight, low cost, corrosion-resistant insert plastic Dall Flow Tube, is the subject of a new 4-page two-color bulletin issued by Builders-Providence, a division of B-I-F Industries. The bulletin includes photographs, dimensional and cost-comparison tables, cutaway views, and performance charts in addition to explanatory text.

The new Model DFT-PI Dall Flow Tube is made of fiberglas-reinforced epoxy or polyester resins with metallic throat lining. Its light weight and corrosion resistance make it economical for metering acids, alkalis, slurries, and gases.

For your free copy of Bulletin = 115-R1, circle No. 12 on Information Service card, page 67.



Belt Conveyor Scale

Development of a unitized, pneumatic, belt conveyor scale which is easily installed on existing flat-belt or trough-type conveyors with a minimum of downtime and only slight modification to the conveyor has been announced by Weighing & Control Components, Inc. The unit can be adapted to either fixed or variable speed conveyors.

The W-C belt conveyor scale is available in a variety of sizes to handle a large range of capacities. Described as a rugged yet highly sensitive and versatile unit, the scale uses no knife edges, pivots, or bearings. Instead, it employs a flexural frame arrangement which eliminates effects of side thrust and eccentric loading on the conveyor, delivering a single component of force.

Used in conjunction with other W-C unitized weighing components, the scale is claimed to perform a number of functions indispensable to automatic processing and manufacturing. The rate of flow of material in terms of weight can be indicated, recorded, totalized, proportioned or programmed.

For full information, circle No. 13 on Information Service card, page 67.

Equipment News . . .

New Hough Tractor Shovel

The Frank G. Hough Co. has just announced a new four-wheel-drive, rubber-tired tractor-shovel with 7000 lbs. carry capacity, the Model H-70. This loader, already in production, will replace the Model HH Payloader.

Features of the new H-70 include more power, more traction, stronger components, greater protection against dirt and dust, more efficient torque-converter, complete power-shift transmission, power-transfer differentials, power-steering, pry-out bucket action, safety boom arms, power-boosted brakes and numerous refinements.

New and more powerful gasoline and diesel engines provide from 105 to 110 h.p. Diesel engines are available in either 2 or 4 cycle types.

Improved weight distribution provides an additional 1,500 lbs. of weight on the rear wheels making possible better traction and greater digging effort.

Heavier, stronger components include the main frame, boom arms and bucket linkage. The axle assemblies are from 40 to 80% stronger and additional axle width increases the stability of the new Model H-70. These improvements aid productivity.

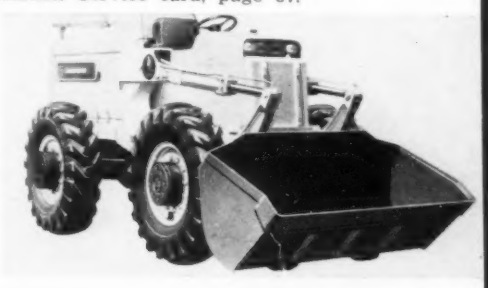
To assure the fullest protection of the engine when operating in dusty conditions, the H-70 has a triple air cleaner system with a precleaner and two oil-bath air cleaners. A cartridge-type oil filter is built into the hydraulic reservoir. Similar filters protect the engine oil, the transmission and torque-converter oil. The front service brakes are sealed to keep out dust, dirt and foreign matter.

A new, larger torque-converter in the Model H-70 is closely matched to engine and transmission characteristics. It is a single-stage, two-phase converter with a torque-multiplication factor of 2.72 to 1 at stall.

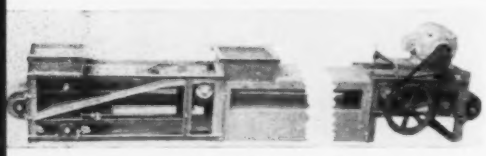
The "Paylomatic" power-shift transmission, designed and built by Hough, provides 3 speeds in each direction. Fingertip shifting up or down in either direction, without "clutching" or stopping for a range shift, gives fast operating cycles.

Power-transfer differentials which automatically shift additional torque to the wheels with the best traction continue as standard equipment on both front and rear axle assemblies of the new "Payloader" Model H-70.

Literature and complete specifications on this new unit may be obtained by circling No. 14 on Information Service card, page 67.



Equipment News . . .



Trough-Belt Conveyor

Universal Hoist Company has announced a new conveyor suitable for all fine free-flowing material in capacities up to 2750 cu. ft. per hour.

Trouble-free service, less maintenance, as well as low first cost are claimed because of the rollerless design. The 12" belt is pulled through a formed steel trough at speeds up to 500 ft. per minute. Because material is carried on the belt, the unit cleans itself completely between each run.

Using a reversible motor, the Model K can be run in either direction and, when suspended from a track system, can be shuttled back and forth as well as sideways. The new conveyors are offered in any exact length.

Universal Hoist also manufactures tail hoppers, movable trough hoppers, movable trippers, discharge adapters, weather covers and drives, as well as track systems for shuttle operation and dollies for portable use, all available for 1 week delivery.

Full information is available by circling No. 15 on Information Service card, page 67.

Bulk Shipping Container

Corrugated bulk shipping containers that hold up to one ton of dry, free flowing materials are now being produced by The Ohio Boxboard Company. Called "Pillar-Pac," these new patented containers have self-palletized construction which facilitates fast, easy handling by fork lift trucks. Square-shaped Pillar Pacs can be stacked two high.

Constructed of double wall corrugated board, they offer a body bursting strength of up to 500 pounds per square inch; and are approved for rail shipment under Uniform Freight Classification Rule 41. Set-up and filling claimed to be fast and easy.

For Pillar-Pac brochure, circle No. 16 on Information Service card, page 67.

Corrosion-Resistant Reactors

A revised Buyer's Guide containing information of interest to chemical processors is now available from The Pfaudler Co., a division of Pfaudler Permutit Inc., producer of alloy equipment.

The twelve-page bulletin 'Buyer's Guide to Pfaudler Corrosion Resistant Process Equipment' includes information on all types of Pfaudler reactors, heat exchangers, tanks and process equipment; descriptive data pertaining to application, capacities, and specialized function is included.

Copies of Bulletin 968 may be obtained by circling No. 17 on Information Service card, page 67.

Processing Equipment Catalog

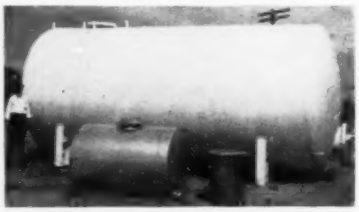
An eight-page condensed catalog on processing equipment and systems has been announced by Sprout, Waldron & Co. Bulletin 200 covers equipment for size reduction, size classification, mixing and blending, materials handling, pelleting and densifying. Size ranges, connected horsepower, designed construction highlights and general applications for each type of equipment are included. Copies are available by circling No. 18 on Information Service card, page 67.

Safety Bung Bulletin

New two-page Bulletin F-17 describes OPW-Jordan's safety bung, designed to protect against the explosion of volatile liquids in storage. Free bulletin includes application information, cut-away drawings, and complete engineering information on safety bungs used in process industries where hazardous liquids are stored. For your free copy, circle No. 19 on Information Service card, page 67.

Flowrator Meter For Corrosives

Indicating Flowrator Meter featuring vitreous enamel lined end fittings and designed for corrosive service is described in new Spec Sheet 10A1710 available free by circling No. 20 on Information Service card, page 67.



Rubber-Lined Fertilizer Tanks

Fifteen different stock sizes of rubber-lined steel tanks are now available for quick delivery to fertilizer users from Abrasion & Corrosion Engineering Co., fabricators of rubber-lined steel equipment for agriculture and industry. The firm specializes in producing fertilizer tanks of all types, including applicator tanks. For tank types and sizes not included in their regular stock, A & C is geared to provide fast custom fabrication to required specifications, with delivery to any location. Full information can be obtained by circling No. 21 on Information Service card, page 67.

Pneumatic Bulk Trucks

A special bulletin describing pneumatic bulk trucks for the handling of chemical and industrial materials has been announced by Sprout, Waldron & Co. In addition to illustrating various truck models there is a diagrammatic presentation of the "on-board" air system. Photographs of actual bulk trucks are included.

Advantages of bulk handling and specific information on possible cost savings are also included. Copies of Bulletin 205 are available by circling No. 22 on Information Service card, page 67.

'Snap-In' Flowrator Meter

Indicating Flowrator Meter featuring "snap-in" tube construction that eliminates the need for operating and maintenance adjustments and has no packing or stuffing boxes is described in new Spec Sheet 10A2700, available free by circling No. 23 on Information Service card, page 67.

New Case Wheel Loader

A new low-priced wheel-type loader with power boosting torque converter drive has been announced by the J. I. Case Company. Standard equipment also includes self-leveling bucket, shuttle transmission, and full-time power steering.

Designated the Case "420," it is said to develop 4600 lbs. breakout force. The bucket is 63¾" wide with 25° rollback and full 90° forward roll at ground level. The exclusive self-leveling device eliminates spillage as it prevents the bucket from tipping backward when raised.

Full details by circling No. 24 on Information Service card, page 67.

Conveyor Chain Booklet

Chain Belt Company has published a new bulletin describing its conveyor chains for various industries.

For a copy of Bulletin 5860, "Conveyor Chains," circle No. 25 on Information Service card, page 67.

Liquid Fertilizer Pump

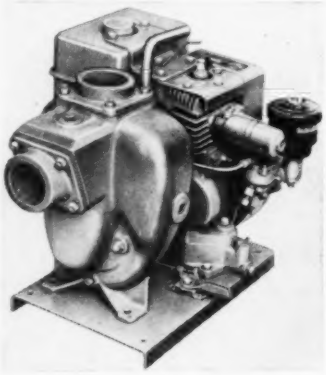
A low cost engine driven pump of all-iron construction recommended for transferring or spraying liquid fertilizers has been announced by Marine Products Company.

All-iron construction of the 'Flomax 8' centrifugal pump, is claimed to withstand corrosive effects of pumping liquid fertilizers, as determined by actual field performance of the pumps over several seasons' operations.

The unit is entirely self-contained with its own gasoline engine. It requires no power take-off connection and the pump can be put into operation immediately after piping connections are completed.

Flomax Model 8 is for connection to 2" hose or pipe and at maximum output delivers 8,400 gallons per hour. Weight of the entire unit is 64 lbs.

Complete data may be obtained by circling No. 26 on Information Service card, page 67.



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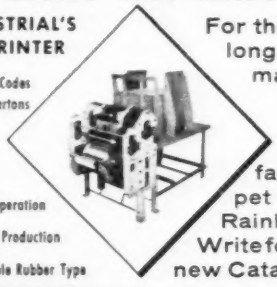

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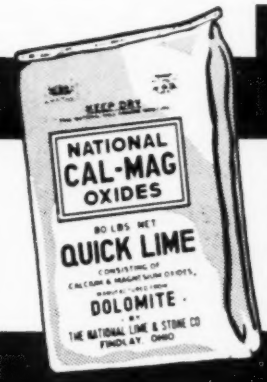

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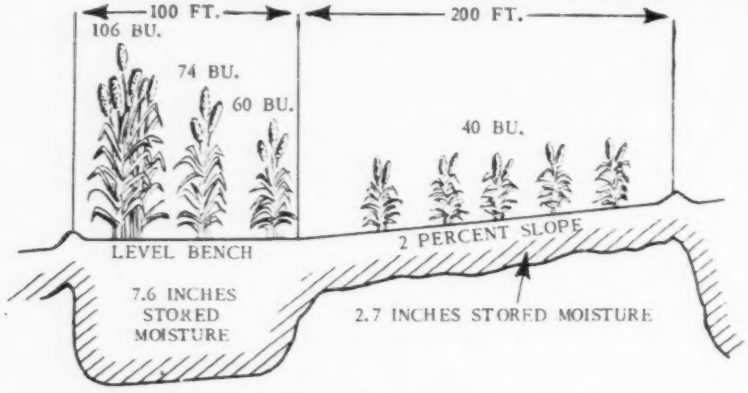
USDA Scientists Studying 'Land Benches' to Store Rainfall



Water-Holding ability of combined bench and slope contributed to increased grain-sorghum yield on semiarid land in first test.

Saving of rainfall runoff expected from new type of contour terracing

A new kind of contour terracing for semiarid lands—wide, level benches separated by even wider strips of natural slope—is being investigated by USDA scientists who are seeking ways to check erosion and conserve runoff for crop use.

The tests are being conducted at USDA's Southwestern Great Plains Field Station near Amarillo, Tex. Soil researchers A. W. Zingg and V. L. Hauser have results from only one crop year, but the results are good enough to warrant further testing.

The scientists constructed 4 level benches totaling 13 acres on a 40-acre plot with a slope ranging from 1 to 1.8 percent. The benches vary from 1100 to 1400 feet in length and from 80 to 145 feet in width.

Bench forms natural reservoir

The benches are separated by unleveled strips of land that contribute runoff water to the benches. The ratio of contributing area to bench area is 2 to 1. Maximum depths of cut and fill were about 1 foot.

Annual rainfall averages about 17.6 inches at Amarillo. Since no runoff data were available, approximations were derived from data from four areas of Texas and Oklahoma where soil and terrain are similar. On the basis of these approximations, the researchers estimated runoff each year at zero to 5.7 inches, with an annual average of 1.1 inches.

Practice raised sorghum yield

Grain-sorghum yields over an 18-year period at the Amarillo field station averaged 16.8 bushels per acre. A 1956 irrigation study at Amarillo showed an increase in grain-sorghum yield of 10 bushels per acre for each inch of irrigation water, to a maximum of about 100 bushels.

Rainfall in the Amarillo area frequently comes in downpours rather than in showers. The scientists realized they could not hope to trap all the runoff. They also knew they could not use the ground-stored water as efficiently as water used in the irrigation study. They concluded they could reasonably expect an increase of 5 bushels of grain sorghum per acre for each inch of runoff trapped.

The early variety of Hegari grain sorghum was seeded on the four benches. The intervening strips of normal slope supplying runoff water are in sorghum-wheat-fallow.

The single crop year during which the test was made was unusually moist. At seeding time soil on the benches held more than 7 inches of available water and the contributing areas held almost 3 inches. Similarly, rainfall during the growing season, June 15 to October 15, was recorded at 9.35 inches as opposed to the 8.67-inch average for the season.

Grain yield on the benches was 80.3 bushels per acre. Yield on the contributing area totaled 40 bushels per acre. Both of these figures were somewhat higher than anticipated, and the scientists credit most of it to the better-than-normal moisture conditions. Although these results are highly encouraging, additional tests are needed, particularly in times of average rainfall, to evaluate the feasibility of contour benching.

Semiarid lands may benefit

Conservation benches serve the same function as terraces in controlling runoff. Consequently, adequate outlet capacity must be provided at the bench ends to prevent overtopping of the ridges during severe storms.

In years of above-average rainfall, tilling, planting, and cultivating may be difficult owing to wet ground in the benches. Weed control in wet years is also likely to be difficult and may require use of chemicals.

The initial test indicates that wide benches create natural reservoirs for runoff and the scientists hope that increased production may more than offset the cost of construction.

(from USDA's AGRICULTURAL RESEARCH, *August 1958.)*

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SITUATIONS WANTED

OFFICE POSITION wanted by man experienced in credits, insurance, purchasing and scheduling shipments of supplies, sales contracts and price lists. Age 58 with 41 years experience in office Jackson Fertilizer Company, Jackson, Miss. Worked from stenographer to Vice-President and Manager. Box = 9, % Commercial Fertilizer, 75 Third Street, N. W., Atlanta, Ga.

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Northeast NPFI Committee Elects Cox, Recommends Demonstration-Technique Study

T. R. Cox, chief agronomist for American Cyanamid Company, was elected to a two-year term as chairman of the Northeastern Research and Education Committee of National Plant Food Institute at the group's August 15 meeting in New York City. In this capacity he will also serve as official representative to the National Steering Committee.

Perry Onstot, of Davison Chemical Company Division of W. R. Grace & Co., was named alternate representative to the steering committee, and Dr. W. H. Garman, NPFI Northeastern regional director, was elected secretary of the Northeastern committee.

The Institute should concentrate its efforts on developing effective fertilizer demonstration techniques and on developing better methods to utilize and promote demonstrations, members of the Northeastern Research and Education Committee agreed.

Committee members felt that the Institute can render more valuable service by developing and encouraging development of better demonstration methods than by using its funds directly to help establish demonstrations.

They also decided that, as more effective techniques are developed, local groups—working with appropriate agricultural agencies—should and would support the actual work of putting out demonstrations. Tentative plans also were made for a Fall meeting of the committee to advise on plans for the 1959-60 Institute program.

The group met in the Governor Clinton Hotel with Dr. Garman, W. R. Allstetter, vice president, and Merle Adams, Northeastern district representative, representing the Institute. Committee members present, in addition to Messrs. Cox and Onstot, included the following: W. E. Angstadt, Reading Bone Fertilizer Co.; Dr. Murry McJunkin, U. S. Steel Corp.; George Serviss, G.L.F. Soil Building Service; Dr. Harvey Stangel, Nitrogen Division, Allied Chemical Corp.; and Dr. E. S. Younts, American Potash Institute, who represented Dr. E. T. York.

Other committee members include: Myron Keim, Virginia-Carolina Chemical Corp.; R. W. Donaldson, The Hubbard-Hall Chemical Co.; and George Lippincott, Dorchester Fertilizer Co.

Plans Taking Shape for California's November Meeting

Ronald Reagan, popular motion picture and television star, will be a featured speaker at the Thirty-fifth Annual Convention of the California Fertilizer Association, to be held at the Ambassador Hotel, Los Angeles, on November 9, 10 and 11.

He will speak following the luncheon for delegates and ladies on November 10.

Dr. Russell Coleman, executive vice president of National Plant Food Institute, will bring to the convention an important message on the economics of the use of fertilizer during the morning business session on November 10.

Roy Kennedy, general credit manager for California Spray-Chemical Corporation, will present to the business session pertinent thoughts concerning the problems of credit in the fertilizer industry. This will be of keen interest to every person engaged in the fertilizer business, according to John Hooper, Convention Program Committee chairman.

CFA President William G. Hewitt will preside at the business session. Reports will be given by M. E. McCollam, chairman of the Association's Soil Improvement Committee, and by General Manager Sidney H. Bierly, concerning activities during the preceding year, and plans for 1959.

Four new members of the Board of Directors will be elected by active members of the association; the 1959 budgets will be considered; and 1959 officers will be elected by the newly-constituted Board of Directors.

All ladies in attendance will be guests of the association at a social hour and luncheon at the Huntington-Sheraton Hotel in Pasadena. Following this luncheon, they will visit the famous Huntington Art Gallery and grounds. A ladies golf tournament, putting contest, and bridge and canasta tournaments will be featured.

The men will take part in golf and bowling tournaments. Delegates and their ladies will enjoy a fine dinner and dancing to Freddy Martin's famed orchestra in the Cocoanut Grove, which is reserved for the exclusive use of this convention. The Grove's top-flight entertainment scheduled at that time will be a feature of the evening.

Information concerning the convention may be had by contacting Sidney H. Bierly, general manager, California Fertilizer Association, 475 Huntington Dr., San Marino 9, Calif.

New England Conference Program Is Announced

Plans are completed for the program of the annual New England Fertilizer Conference, which will be held September 24 at Bald Peak Colony Club, Melvin Village, N. H.

Registration will begin at 3:30 p.m. on the preceding afternoon, and morning and afternoon business sessions will be held September 24, followed by a banquet that evening.

The forenoon business session will begin at 10:00 a.m. with Dean W. B. Young of the Connecticut College of Agriculture presiding. Dr. W. H. Garman, Northeastern regional director for National Plant Food Institute, will welcome delegates to the meeting. W. C. McKain, Jr., head of University of Connecticut's Rural Sociology Department, will talk on 'Urban Industrial Development.' 'Future of New England Agriculture and Fertilizer Industry' will be the topic of I. F. Fellows, of the Department of Agricultural Economics and Farm Management at University of Connecticut. The morning session will wind up with a discussion period.

Wednesday afternoon's session, beginning at 2:00 p.m., will find A. A. Spielman, associate director of Connecticut's Agricultural Experiment Station, at the gavel. T. M. Adams, head of Agricultural Economics Department at University of Vermont, will speak on 'The Future of the Dairy Industry.' 'The Future of Potato Growing' is the subject of A. L. Perry, from Maine University's Agricultural Economics and Farm Management Department. W. H. Drew of New Hampshire's Agricultural Economics Department will talk about 'The Future of Fruits and Vegetables.' And P. L. Putnam, who heads Connecticut's Agricultural Economics and Farm Management Department, will complete the program with 'The Future of Tobacco in the Connecticut Valley.'

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